Final Performance Evaluation of the UBALE Development Food Assistance Project in Malawi

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COVER PHOTO CREDIT

Female care group participants with children under two years of age. Photo: Ruth Harvey. 2019.

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Sincerely,

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ACRONYMS

ACPC	Area Civil Protection Committee
ADC	Area Development Committee
AEDO	Agriculture Extension Development Officer
ANC	Antenatal care
ANCC	Area Nutrition Coordinating Committee
BNC SACCO	Blantyre, Nsanje, and Chikwawa) Savings and Credit Cooperative Organization
CADECOM	Catholic Development Commission in Malawi
CAHW	Community Animal Health Worker
CARD	Centre for Agricultural Research and Development
CAWT	Conservation Agriculture with Trees
CCFLS	Community-led Complementary Feeding and Learning Session
CG	Care Group
C-IMCI	Community-based Integrated Management of Childhood Illness
CLAN	Community Leaders for Action on Nutrition
CGV	Care Group Volunteer
CRS	Catholic Relief Services
CSB	Corn Soya Blend
CU2	Children under two years of age
CU5	Children under five years of age
DADO	District Agriculture Development Officer
DCT	District Coordination Team
DEC	District Executive Committee
DFAP	Development Food Assistance Project
DFSA	Development Food Security Activity
DiNER	Diversity and Nutrition for Enhanced Resilience
DNCC	District Nutrition Coordinating Committee
DNHA	Department of Nutrition, HIV and AIDS
DRM	Disaster Risk Management
FFA	Food for Assets
FFP	Food for Peace
FGD	Focus group discussion
FY	Fiscal year
GoM	Government of Malawi
GVH	Group Village Head
HH	Household
HIV	Human Immunodeficiency Virus
HQ	Headquarters
HSA	Health Surveillance Assistant
IDI	In-depth interview
IFAD	International Fund for Agricultural Development
IP	Implementing partner
IYCF	infant and young child feeding
JMTR	Joint mid-term review
KII	Key informant interview

LOA	Life of activity
MAD	Minimum acceptable diet
MCHN	Maternal and child health and nutrition
MEAL	Monitoring, Evaluation, Accountability and Learning
MFI	Microfinance institution
MIRA	Measuring Indicators for Resilience Analysis
MMF	Minimum Meal Frequency
MoAIWD	Ministry of Agriculture, Irrigation and Water Development
MUSCCO	Malawi Union of Savings and Cooperatives
MWK	Malawi *Kwacha*
NASFAM	National Smallholder Farmers' Association of Malawi
NCBA CLUSA	National Cooperative Business Association CLUSA
NGO	Non-governmental organization
NRM	Natural resource management
NSO	National Statistics Office
OFSP	Orange-fleshed sweet potato
OPV	Open Pollinated Variety
ORT	Oral Rehydration Therapy
PICS	Purdue Improved Crop Storage
PBS	Population-based survey
PLW	Pregnant and lactating women
PMU	Project Management Unit
PPM&E	Participatory Planning, Monitoring, and Evaluation
PPS	Probability proportional to size
PREP	Pipeline and Resource Estimate Proposal
PSP	Private Service Provider
SACCO	Savings and Credit Cooperative Organization
SILC	Savings and Internal Lending Community
SMART	Skills for Marketing and Rural Transformation
STAM	Seed Traders Association of Malawi
TfD	Theater for Development
TA	Traditional Authority
TANGO	Technical Assistance to Non-Governmental Organizations
UBALE	United in Building and Advancing Life Expectations
USAID	United States Agency for International Development
USD	United States dollar
USG	United States Government
VCPC	Village Civil Protection Committee
VDC	Village Development Committee
VNCC	Village Nutrition Coordinating Committee
VH	Village Head
VNRMC	Village Natural Resource Management Committee
WALA	Wellness and Agriculture for Life Advancement
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WOCCU	World Council of Credit Unions
WPC	Water Point Committee
YFHS	Youth Friendly Health Services

EXECUTIVE SUMMARY

1.1 Evaluation Purpose and Evaluation Questions

This report presents findings from the endline evaluation of the United in Building and Advancing Life Expectations (UBALE) project in Malawi, a five-year Title II Development Food Assistance Project (DFAP) funded by the United States Agency of International Development (USAID) Office of Food for Peace (FFP). The purpose of the evaluation is to measure the performance and development outcomes of the UBALE project to provide learnings to inform the development of future Title II projects in Malawi and other countries. The endline evaluation objectives are to:

- Determine the endline values of key impact and outcome-level indicators;
- Conduct bivariate and multivariate analyses of impact and outcome indicators;
- Gather qualitative data to ground-truth survey data and provide contextual information on the overall food insecurity and malnutrition situation; and
- Assess progress toward end-of-project targets for impact and outcome indicators.

The findings are expected to have primary accountability and learning value for USAID (FFP/Washington, USAID/Malawi, FFP Southern Africa Regional Office, and the FFP learning network), implementing partners, and their sub-partners. Additional stakeholders include Government of Malawi (GoM) officials from collaborating ministries and regional committees, including the Southern Region District Offices. Evaluation findings, conclusions, and recommendations will be used by USAID/FFP to understand lessons learned and generate insights to inform the design of follow-on FFP activities in Malawi and southern Africa.

To ensure that the evaluation provides valid and reliable data and directly addresses the evaluation objectives, key evaluation questions based on FFP-provided evaluation questions were incorporated into the endline design and methodology, both quantitative and qualitative:

- To what extent did the project achieve its intended goal, objectives and results as defined by the results framework?
- How did project activities improve the ability of beneficiary households and communities to mitigate, adapt to, and recover from food security shocks and stresses?
- How well were project activities planned and implemented?
- To what extent did the project coordinate with other food security and humanitarian programming, the host country government, and the donor?
- How sustainable are the project's outcomes?
- How well were gender and environmental considerations integrated into project design and implementation?

1.2 Project Background

Implemented from September 2014 through July 2019, UBALE aimed to reduce chronic malnutrition and food insecurity and build resilience among vulnerable populations in the three most food-insecure, chronically malnourished, disaster-prone districts of southern Malawi: Chikwawa, Nsanje, and Rural

Blantyre. UBALE intended to reach 248,200 households, responding to the USAID/FFP project goal to sustainably reduce food insecurity in Malawi through three Purposes: (1) Vulnerable households' income increased; (2) Improved nutritional status among pregnant and lactating women (PLW) and children under two (CU2) and (3) Communities are empowered to contribute to their own sustainable development.

1.3 Evaluation Methodology

This was a mixed-methods performance evaluation with quantitative and qualitative components. It consisted of a quantitative survey (conducted July-August 2019) that gathered endline estimates of FFP indicators, and a qualitative study (conducted October-November 2019). Per FFP protocol for quantitative performance evaluations, the quantitative methodology was a population-based survey (PBS) drawn from the general population in the three districts comprising the DFAP area. The sample is designed to be statistically representative of the entire population within the project implementation area. A total of 1,260 households were interviewed in order to capture statistically significant changes in FFP indicators from the baseline (2015) to the end of project. The questionnaires and the calculation of indicators were the same in the baseline and endline.

The purpose of the qualitative study was to provide the empirical basis for interpreting quantitative outcomes and to better understand what had changed over the course of the project. The topical outlines that guided the interviews were structured along the evaluation questions. The qualitative study used purposive sampling that included some of the Traditional Authorities that were part of the joint mid-term review and the PBS survey. The final dataset was comprised of 72 key informant interviews and 50 focus group discussions. In-depth interviews were conducted with 24 key informants and project participants to get a better understanding of how project participation impacted their health, nutrition, livelihoods, and food security. The qualitative study team also made 15 field observations of various project activities such as demonstration plots, farms, home gardens, Food for Assets infrastructure (e.g., cattle dips), homes, hygiene practices, and WASH facilities. The study team triangulated qualitative findings with PBS quantitative data and Indicator Performance Tracking Tables (IPTTs).

The main limitation to the final evaluation was evaluation timing. UBALE field activities ended in March 2019; thus, at the time of the evaluation, the majority of project staff were no longer available for interviews or site visits. To address this, the qualitative study team obtained internal project documents, observed activities that continued after the life of the activity (LOA), gathered data from participants, and communicated with various project and implementing partner staff via email and teleconference.

1.4 Findings and Conclusions

1.4.1 Purpose 1: Vulnerable Households Increase Income

Purpose 1 activities were appropriate to participant needs. In line with the integrated nature of project activities, agricultural interventions under Purpose 1 increased the production of nutritional foods needed to achieve Purpose 2 objectives; supported women and men to make decisions together;

increased income and savings; and provided options to farmers and communities to improve their resilience by incorporating agriculture technologies that increase yield and sustainability. The integration of activities created a supportive environment for farmers to increase food production and income. However, the project area, and the districts, suffered extreme weather events and market failures in four of its five years of operation that undermined production and sales.

A major achievement of UBALE was strengthening the capacity of government and traditional structures to monitor and implement extension work. UBALE's agriculture extension strategy included working through Agriculture Extension Development Officers to support lead farmers and was successful in transferring skills, suitable technologies, and new agriculture management techniques to farmers. Diversity and Nutrition for Enhanced Resilience (DiNER) fairs were organized to encourage farmers to diversify their crops using high-quality hybrid seed. Seed multiplication groups helped to improve accessibility to sorghum, orange-fleshed sweet potato (OFSP), and bio fortified bean seeds.

The number of participant farmers and others who applied improved technologies or management practices exceeded project targets in FY17 and FY18 (per IPTT data). In contrast, PBS results show a baseline-endline decrease of 22 percentage points for the percentage of farmers who used at least three sustainable agriculture practices and/or technologies in the past 12 months, and the percentage who used at least two sustainable crop practices and/or technologies. The PBS indicates that the largest baseline-endline decrease is in the percentage of farmers using improved storage practices: almost 32 percentage points. The effect of adverse weather and resulting food and income insecurity on the districts should be considered when interpreting these data.

SILCs provided a successful mechanism for poor households to save money and access credit. As of September 2018, UBALE SILC groups comprised 86,224 participants (75.1 percent female) and had over USD 1.4 million in savings and nearly USD 1.2 million in outstanding loans. The return on savings was 38.1 percent (CRS Malawi, 2019). However, UBALE's efforts to establish a Savings and Credit Cooperative Organization did not allow adequate time for financial and managerial processes to mature, and at the end of the project the SACCO was not sustainable without substantial external support.

The PBS found that only three in ten farmers were using financial services at endline. It also showed that the percentage of men and women married or in union who earned cash in the past 12 months was lower at endline. This may again be explained in part by the widespread recurrent shocks that destroyed crops and reduced income during the LOA.

UBALE assisted farmers to organize to sell collectively, build sustainable market connections for select value chains, and form higher-level marketing associations, enabling the sale of larger quantities. PBS endline results show a statistically significant decrease in the percentage of farmers who practiced UBALE-promoted value-chain activities. However, raw sales data provided by UBALE show that five marketing associations with 1,172 farmer-members earned over MWK 83 million on sales of value chain commodities in the 2017/2018 season. Farmers support the marketing group concept but need continued technical support and aggregated crop storage facilities.

The gender dialogues and emphasis on gender equality have led to greater sharing of household responsibilities by men, improved household relations, and reduced domestic violence. Women have more time to participate in community activities and the confidence to assume leadership positions.

UBALE worked with youth clubs, but beyond disseminating messages and some public service activities, there was no clear agenda to support the needs of youth, representing a missed opportunity.

1.4.2 Purpose 2: Improved Nutritional Status among PLW and CU2

To address issues of good health and nutrition, UBALE followed the evidence-based approach of targeting the first 1,000 days of life from conception through a child's second birthday. Community mobilization efforts and integration of Purpose 1 and 2 activities, especially in project communities with intense agricultural support, successfully linked 1,000-day households to access to nutrient-dense, diverse foods. Despite overall deterioration of household food access and decreased dietary diversity due to multiple shocks, consumption of nutrient-rich value chain commodities, especially OFSP, increased among women of reproductive age and CU2. A major achievement was full-scale implementation of Care Groups, the key component of the Government of Malawi community nutrition strategy across all three districts, reaching over 92 percent of the target population.

Supplementary ration distribution during the hunger season targeted all PLW and CU2 in project communities. UBALE exceeded the targeted number of pregnant women receiving rations (157 percent of target) and met targets for mother-child pairs (children age 0-5 months, 6-23 months) (CRS Malawi, 2018a). The distribution of corn-soy blend reinforced complementary feeding messages, and oil and split peas were easily integrated into the diet for both women and children. Once agricultural activities increased the availability of beans and pigeon peas, families continued feeding these to their children.

UBALE surpassed project targets for decreasing malnutrition in children under five (CU5). The proportion of CU5 classified as underweight decreased from 13.0 percent to 8.2 percent ($p<0.01$), and the percentage with moderate or severe stunting (chronic malnutrition) decreased from 37.4 percent to 24.3 percent ($p<.001$). Among CU2, the most vulnerable group and main focus of project activities, baseline-endline comparisons show a stunting decreased over 13 percentage points to 17.4 percent ($p<0.001$). The significant reduction in CU2 stunting runs counter to the predictions of the joint midterm review and merits further study to assess the extent to which lean season rations were sufficient and contributed to project gains. There was no statistically significant change in women's nutritional status.

The endline survey found more than three-quarters of children under six months are exclusively breastfeeding; while there was no significant change since baseline, key informants and focus groups reported increases in exclusive breastfeeding as a result of the Care Group breastfeeding module. According to the endline survey, the percentage of children aged 6-23 months receiving minimal acceptable diet decreased more than 10 percentage points to just over 5 percent.

The qualitative study found the Community Complementary Feeding and Learning Sessions (CCFLS) were an effective approach to the identification of and early intervention with children at risk of malnutrition, reinforcing child feeding practices, and improving dietary diversity. According to key informants, DiNER fairs, food preservation teaching events, and UBALE's emphasis on locally available foods helped households maintain dietary diversity and food security during the lean season.

Baseline-endline comparisons show that Minimum Dietary Diversity in Women (MDD-W) in the project area worsened from 23 to 16 percent ($p<0.01$). In contrast, a Tufts University study found that 31 percent of women were meeting the MDD-W (Masters and Schneider, 2018). Although the project area

experienced challenges in household food security, the endline survey results show that the percentage of women of reproductive age consuming targeted nutrient-rich value chain commodities increased from 16.2 percent to 27.1 percent ($p<0.001$). Intake of nutrient-rich value chain commodities also increased among CU2, from 8.7 percent to 16.2 percent ($p<0.05$).

The percentage of CU5 who had diarrhea in the two weeks prior to the survey increased slightly by endline from 19.0 to 24.1 percent ($p <0.1$); UBALE did not achieve the target (13.0 percent). However, district health and nutrition authorities and focus groups in almost all communities reported a large decrease in diarrheal cases and the near eradication of cholera as a result of UBALE efforts in water, sanitation, and hygiene. For three out of the four water treatment technologies, adoption improved significantly, with 28.7 percent of UBALE households practicing correct use of recommended household water treatment technologies, an increase of 20.7 percentage points from baseline ($p<0.001$). PBS data show no change in household use of improved sanitation facilities, but the qualitative data indicate large positive changes in peoples' knowledge and appreciation of basic hygiene and sanitation and widespread promotion and adoption of latrines, though construction quality was often low.

The endline survey data indicate positive change in joint household decision-making. From baseline to endline, the prevalence of men making maternal health decisions jointly increased from 20.1 to 31.9 percent. Similarly, regarding child health and nutrition, joint decision-making among men increased over 8 percentage points to 40.3 percent. The project component intended to focus on empowering teenage and young mothers, identified by partners and the health system as most at risk, was not implemented.

1.4.3 Purpose 3: Communities are Empowered to Contribute to their own Sustainable Development

UBALE worked with the governance structures necessary for the project to function and meet its objectives such as Village Development Committees, Care Groups, Water User Committees, private service provider networks, marketing clubs, and youth clubs. The project reinvigorated and used the government structures and the social scaffold of traditional authorities, providing trainings to village, area and district committees to improve their understanding of their roles and responsibilities and ability to organize themselves, plan and monitor their progress, and obtain funding for priority activities to improve their communities. Village, area, and district committees were coordinated with districts and Traditional Authorities to build credibility and accountability.

At the time of the qualitative study, Village Civil Protection Committees (VCPCs) and Village Natural Resource Management Committee were working to promote risk reduction activities, monitor the coming rainy season, set flood contingency plans, and support nurseries to continue reforestation and protection of riverbanks. At project end, most committees achieved scores around 70 percent on the capacity assessment tool against a target of 80 percent. VCPC members indicated that committee member turnover and lack of training for new members limited committee performance.

Village committees and participants appreciated the creation or rehabilitation of community assets and the support to vulnerable individuals. UBALE closed activities six months prior to the qualitative study team's visit; however, the team observed that village committees continued to support nurseries and plant tree seedlings to mitigate soil erosion and deforestation, improve water retention, and provide

shade and groundcover in support of agricultural production. The continuation of community organization and local government interest indicates that the communities value these activities. District officials stated that the presence of organized committees in UBALE communities made it easier for government to continue supporting health and extension services.

UBALE delivered a variety of gender messages that enabled greater participation by women in decision-making structures. Participants reported that more women now serve on committees, hold higher-level decision-making positions, and are able to voice their opinions at the community and family level. Among UBALE participants, the percentage of women in community committees reached 46 percent, or 92 percent of target over the LOA. Additionally, 56 percent of marketing club members and 75 percent of SILC group members were women. In the endline survey, 60.5 percent of respondents said that community leaders encourage women to participate and take up leadership roles, while only 28.4 percent said that community leaders sensitize communities to the importance of female participation.

1.5 Recommendations

R1. Expand opportunities for market-based food security solutions. New, more market-based food security solutions need to be identified at local, district and national levels. There are large private buyers willing to work with small producers and it is critical for future programs to find ways to incorporate private companies dedicated to buying and selling agriculture products. These companies should be part of the initiative to include market-oriented outcomes that will provide sustainability to agriculture activities and generate income at the village level.

R2. Root community assets in an integrated watershed management strategy. Just as sustainable farming and income generation should be central to the design of the project, an integrated watershed management should be applied to bring together key elements of strategic planning. This strategy should involve government officials, communities, and local experts to start defining risks, action plans and support.

R3. Use small irrigation schemes to build food security. Small and medium irrigation schemes should be considered in new proposals to strengthen the ability of communities and farmers to mitigate and adapt to food security shocks and stresses. These are areas where youth and entrepreneurship linkages can be made with private companies that can support and purchase locally produced food.

R4. Support innovative income generation opportunities for youth. Both new agricultural and non-agricultural income generation opportunities need to be explored for youth, in particular, in order to provide them with viable and sustainable livelihoods. This is particularly relevant for youth, as they are keen to get involved in innovative and new ways of achieving food security.

R5. Invest in livestock development where it is a major component of livelihood strategies. Crops and livestock are part of a sustainable, integrated system at the household level, where one enhances the productivity of the other. In those areas where livestock is a main livelihood, future programs should understand how livestock fits into agricultural systems and consider not only animal health components but also farmers' organizations, markets, value-added activities and coping strategies to adapt to external shocks and stresses.

R6. Allow sufficient time to build new financial institutions. The formation of local financial institutions should start from the beginning of the project and be integrated into the sustainability strategy to give the necessary time for financial services to mature, attract a viable customer base, and achieve sustainability during the LOA.

R7. Build upon established and successful community models and support government policies. Future health and nutrition components of food security programs in Malawi should continue to build on the successful community health model adopted in UBALE.

R8. Ensure support and proper selection of volunteer health promoters. Future programs should provide an adequate budget to cover health promoter stipends for the initial few years of a program. In addition, the selection of promoters using national standards, inclusion of joint training for health promoters and HSAs, and support for joint supervision, will help foster partnership and integration of community and health outreach activities.

R9. Complement capacity building in water management with Infrastructure provision. Training alone is not sufficient without support for improved water infrastructure through FFA or other activities. There is a need for technologies that harness runoff excess water from the borehole for the benefit of animals in an environmentally friendly manner, especially in areas where livestock is an important element of farmers' livelihoods.

R10. Promotion of latrines should be coupled with consistent standards and implemented in phases. The promotion of latrines must be accompanied by minimum standards. People would need economic support such as linking sanitation and hygiene promotion to income generation support.

R11. Implement a results-based M&E system. Programs that aim to change social and behavioral practices need a results-based M&E system that goes beyond measuring outputs and activity targets. Capture of key outcome indicators in annual surveys and close monitoring of coverage indicators is an opportunity for NGO and government partners to periodically review achievements and progress and develop joint ownership of program efforts.

1. INTRODUCTION

The southern districts of Malawi experience high levels of food insecurity compounded by significant climate variability and vulnerability. In 2014 when the UBALE project was being designed, project partners identified the underlying causes of food insecurity as chronic malnutrition, vulnerability to shocks, low agricultural productivity, limited engagement with profitable markets, poor infant and young child feeding practices, inadequate diversification of food sources, inadequate sanitation and hygiene behaviors, limited household and community capacity to manage risk and protect natural resources, weak or ineffective local governance systems and structures, and inequitable gender roles.

Prior to UBALE, 46 percent of households in the Southern region reported inadequate food consumption; these rates in Rural Blantyre, Chikwawa, and Nsanje were even higher at 48 percent, 79 percent, and 80 percent, respectively (GoM, 2012). Food availability was threatened by low crop productivity caused by reliance on rain-fed agriculture, declining soil fertility, small landholding size, and low input use. The Southern region had the smallest landholding size per farmer at 0.73 hectares (nearly 50 percent smaller than the national average), and yield gaps were close to 50 percent for cereals—75 75 percent for legumes—in the target districts (GoM, 2010; GoM, 2011a).

UBALE's target districts suffered from high rates of malnutrition, due to low availability of nutritious foods, high disease burden, and inadequate maternal nutrition and child feeding practices (USAID, 2011). Dietary diversity scores among breastfed infants 6-23 months of age were low, with only 20 percent receiving the minimal acceptable diet (9 percent and 2 percent, respectively, for Chikwawa and Nsanje) (GoM, 2011b). Limited access to potable water and low use of appropriate sanitation and hygiene practices also contributed to poor maternal and child health and nutrition (MCHN) status. In the Southern region, 92 percent of households—and more than 97 percent in Chikwawa and Nsanje—had no improved sanitation facilities (GoM, 2011b).

To address this situation Catholic Relief Services—United States Conference of Catholic Bishops (CRS), in consortium with implementing partners (IPs) CARE, Chikwawa Diocese, National Cooperative Business Association (NCBA) CLUSA, the National Smallholder Farmers' Association of Malawi (NASFAM), and Save the Children, presented a proposal to the United States Agency of International Development (USAID) Office of Food for Peace (FFP) for the United in Building and Advancing Life Expectations (UBALE) project. UBALE, which means "partnership" in Chichewa, proposed to work through government, community, and private-sector systems and structures to implement a comprehensive project to address food insecurity in Chikwawa, Nsanje, and Rural Blantyre districts.

1.1 Project Background

The UBALE project was a five-year Development Food Assistance Project (DFAP) granted by USAID/FFP in September 2014 (CRS, 2016); it ended in September 2019. Working through government institutions at the district, Traditional Authority (TA), and community level, the project aimed to reduce chronic malnutrition and food insecurity and build resilience among vulnerable populations in three of the most food-insecure, chronically malnourished, and disaster-prone districts of southern Malawi. The project served 248,200 direct beneficiary households in 284 communities; 60 percent of these households were

targeted for health activities, 60 percent for disaster-risk management, 50 percent for improvements to agricultural production, 10 percent for marketing approaches, and 8 percent for Food for Assets (FFA) activities.

The project was designed to improve food access and income through agriculture and other livelihoods initiatives; enhance natural resource and environment management; combat undernutrition, especially for children under two (CU2) and pregnant and lactating women (PLW); and mitigate disaster impact through early warning and community preparedness activities. UBALE responded to the FFP-FY-14-RFA and USAID/FFP project goal to sustainably reduce food insecurity in Malawi through the following three Purposes:

Purpose 1: Vulnerable households' income increased, with emphasis on improved crop production, reduction of post-harvest losses, farm management, conservation agriculture, organization and management of community savings and loans, organization of marketing clubs and associations, financial management and household budgeting, and gender equality.

Purpose 2: Improved nutritional status among PLW and CU2, with emphasis on strengthening GoM national nutrition policy and models for MCHN and WASH, strengthening existing government-led implementing and supervision structures at the district, TA and community levels, supporting and training Care Groups and Grandmother Groups, and providing a blanket support ration during the lean season.

Purpose 3: Communities are empowered to contribute to their own sustainable development, with emphasis on strengthening existing structures to provide support and services to individuals and families at the village and TA levels, working with Village Development Committees (VDCs), Village Civic Protection Committees (VCPCs) and Village Natural Resources Management Committees (VNRMCs) to prepare for and mitigate the effects of shocks, put systems in place to prepare for and respond to disasters, protect the natural-resource base from climate change and other weather-related shocks, and ensure that systems for decision-making take women's voices into account.

A joint mid-term review (JMTR) in 2017 (USAID, 2017) made 20 recommendations on five themes: life-changing impact, governance, collaborative learning and action for adaptive management, cross-purpose integration, and using food strategically. The UBALE project worked on implementing these recommendations, adjusting project plans and activities accordingly.

UBALE ended field activities in March 2019 and closed offices in September 2019. This endline evaluation was conducted from June to December 2019.

1.2 Theory of Change

The factors contributing to chronic food insecurity and malnutrition in southern Malawi are complex and interrelated. Poor soil fertility, insufficient agricultural production, and weak access to markets limit both the availability of food and the possibility to earn income, which in turn affects households' ability to use health services. Poor health caused by undernutrition, diarrheal disease, malaria, chronic illness, or infection limits households' ability to engage in productive activity. These mutually-reinforcing elements are subject to chronic and cyclical shocks—some strongly linked to climate change—that

destroy or diminish assets, damage health status, and divert time, energy, and resources from productive activity. Underlying all of these are community systems and structures that often disadvantage women and girls and fail to provide all community members with a voice, ensure that the most vulnerable are cared for, or govern community-owned assets effectively.

UBALE partners developed a theory of change to describe the intertwined development pathways through which the project would assist its beneficiaries to address these factors to ultimately become healthier and food secure. Thus, the project goal was reduced chronic malnutrition and food insecurity and increased resilience among vulnerable populations in the districts of Rural Blantyre, Chikwawa, and Nsanje in Malawi.

The theory of change posits that farmers would be motivated to make improvements to agricultural production by the prospect of increased income that comes with access to markets (Purpose 1). This Purpose describes how UBALE would systematically move households from a situation of greater vulnerability and less risk tolerance (Recover), to being able to consolidate and stabilize their assets (Build), to a point where they can risk higher-level, income-oriented investments (Grow). This evidence-based Pathway to Prosperity model defines how interventions were phased, targeted, and layered depending on households' livelihoods status.

The improvements in food security thus achieved were expected to both facilitate and benefit from improved health and nutrition status for women and children (Purpose 2). To mitigate the risk that households would still fail to thrive because they were insufficiently prepared for shocks, UBALE also assisted households and communities to better manage risks and prepare for shocks and to rebound when shocks do occur (Purpose 3). Underlying all project activities was the intentional strengthening of foundational systems and structures that govern how communities address their own development issues. The objectives of all interventions rely on this sub-Purpose (3.1) to be effective and sustainable.

Throughout each of these Purposes, improved gender equality was considered a necessary precondition for arriving at the desired outcomes. Strengthened participation by and engagement with youth, who form a significant portion of the population but are often undervalued, was also expected to increase the long-term impact of the project.

As part of the management process and in response to a recommendation from the JMTR, the implementing partners (IPs) had one main theory of change review workshop in response to contextual changes, and an ongoing analysis of project gains and challenges.

2. EVALUATION OVERVIEW

2.1. Evaluation Purpose

The evaluation's broad objective is to measure the performance and development outcomes of the UBALE project to provide learnings to inform the development of future programs in Malawi (specifically, the new Malawi Development Food Security Activity [DFSA]) and other countries. It is designed as the second step in a two-part evaluation process, following the baseline at the beginning of the project (USAID, 2015).

The endline is comprised of a representative quantitative population-based survey (PBS) that collected data on the impact and outcome indicators for FFP programs and a qualitative study that provides depth, richness, and context for the evaluation findings. The qualitative study also serves to triangulate information from the quantitative survey findings and analysis.

The specific objectives of the endline evaluation are the following:

- Determine the endline values of key impact and outcome-level indicators—disaggregated by awardee, age, and sex as appropriate— in addition to endline values of demographics in target areas and appropriate independent variables;
- Conduct bivariate and multivariate analyses of impact and outcome indicators with independent variables identified for inclusion in the survey as appropriate, with results provided by awardee and the overall country project area;
- Gather qualitative data to ground-truth survey data and provide contextual information on the overall food insecurity and malnutrition situation; and
- Assess progress toward end-of-project targets for impact and outcome indicators.

The endline evaluation was conducted by TANGO International with assistance from the Centre for Agricultural Research and Development (CARD). Staff from FFP and the USAID Mission in Malawi provided input and were involved throughout the process. TANGO consulted with the UBALE awardees to understand the project description and theory of change, obtain inputs for the quantitative survey instrument and qualitative study, and receive contextual information to develop a sampling and logistics plan. In discussion and coordination with FFP, TANGO has provided draft and final versions of specific deliverables to the awardees for review and information.

This report details the findings and recommendations of the UBALE endline evaluation. The report is aimed at multiple audiences. The findings are expected to have primary accountability and learning value to USAID (FFP/Washington, USAID/Malawi, FFP Southern Africa Regional Office, and the FFP learning network), IPs, and their sub-partners. Additional stakeholders include Government of Malawi (GoM) officials from collaborating ministries and regional committees, including the Southern Region district and sub-district committees. The evaluation findings, conclusions, and recommendations will be used by USAID/FFP to understand lessons learned and generate insights to inform the design of follow-on FFP activities in Malawi and the southern region of Africa. Evaluation recommendations and findings may also be used by FFP internally to refine future proposal guidelines and project policy.

2.2. Evaluation Questions

FFP provided key evaluation questions to guide the design and development of the endline evaluation. In response to these questions, the baseline quantitative and qualitative data were referred to as a basis for comparison. TANGO incorporated the key evaluation questions into the design and methodology of the endline (both the quantitative and qualitative components) to ensure the evaluation provides valid and reliable data and directly addresses the evaluation questions. Annex C provides the nine criteria that guided the evaluation, questions and sub-questions and data collection methods.

3. EVALUATION METHODS

3.1. Quantitative Data Collection

3.1.1 Overview

The objectives of the quantitative component of this mixed-methods performance evaluation are to provide endline estimates of FFP project indicators, to measure changes in indicators over the five-year project cycle, and to provide evidence to prioritize and refine interventions. The evaluation uses a pre-post design in which the same survey was conducted in 2015, at the start of project implementation, and in 2019, following its completion. Pre-post designs provide for measurement and statistical tests of changes in indicators between the baseline and endline, but do not allow for attribution or causation.

The data were gathered via an in-person PBS of 1,260 households in the three UBALE districts. Survey fieldwork took place from July 24 to August 4, 2019, as close as possible to the baseline data collection timeframe (end of July through mid-September). Data collection was scheduled close to the end of the project given weather constraints, namely, that the lean season coincides with the rainy season. The timing of data collection was thus designed to allow for probable access to all project areas.

TANGO and CARD collaborated for survey training, household listing, and survey fieldwork. Surveys were translated into the most common local language, Chichewa. Annex E describes the training and fieldwork in detail.

3.1.2 Population-Based Sample Design

The statistically representative sample was selected using a multi-stage clustered sampling approach. The sampling frame for the endline study was constructed from the 2018 Population and Housing Census enumeration areas (EAs). The Malawi National Statistics Office provided TANGO with a list of TAs and EAs located in the UBALE project implementation area; TANGO used these TAs and EAs as the endline sampling frame. In the first stage of sampling, EAs were drawn with a probability-proportional-to-size (PPS) methodology. In the second sampling stage, households were selected randomly from all households existing in the respective EAs sampled.

Stunting, one of several key measures of food insecurity, was used to compute sample size in the baseline and endline surveys. Sample size is the minimum number of households necessary to detect whether stunting decreased to the project target rate of 29.7 percent (baseline value: 37.7 percent), a reduction of 8.0 percentage points. As shown in Table 1, the total target sample size is 1,260.

Table 1: Information Used to Compute Sample Size

Percentage of stunting at baseline (actual)	37.7
Expected percentage of stunting at endline	29.7
Design effect at baseline (actual)	2.1
Percentage of CU5 of the total population at baseline (actual)	15.4
Household size at baseline (actual)	4.8
Minimum required sample size (# CU5; computed)	594

Minimum required sample size adjusted for the number of CU5 per household (# HH; computed)	1,033
Non-response rate (estimated)	20%
Final target sample size (# HH) (computed)	1,260

The minimum required sample sizes for the baseline and endline surveys were computed to provide estimates of key project indicators (stunting in particular) with similar levels of statistical precision over the two surveys. However, the minimum required sample size for the endline sample has been computed to be significantly smaller than what was estimated for the baseline, because at the time of the baseline, there was less available information about characteristics of project populations, so conservative estimates of key parameters were adopted. At the time of the endline, more accurate estimates of key parameters were available from the baseline results. In particular, the formula used at the baseline to estimate the number of households to achieve a sufficient number of CU5[1] resulted in a much larger number of CU5 being surveyed than was required for statistical purposes. The required sample of households to be interviewed in the endline was therefore adjusted downward to reduce the unnecessary oversampling of CU5. The assumed stunting rate of 0.48 used in the baseline sample size calculation was reduced to 0.36, based on baseline results, and the minimum change to detect (a parameter of the sample size calculation formula) was changed from 6.5 to 8.0 percentage points. These adjustments in the minimum required sample for the endline have resulted in significantly smaller required samples of households to attain indicator estimates that still have the desired level of statistical precision. For this reason, even though the endline sample is smaller than the baseline, the comparison of results with the baseline is statistically valid.

Note: FFP quantitative performance evaluations use a PBS sampling design in which the sample is drawn from the general population in a DFAP implementation area. Accordingly, beneficiaries who directly participate in DFAP activities are not specifically targeted in the quantitative survey; rather, the sample is designed to be statistically representative of the entire population within the project implementation area, which includes DFAP participants and non-participants.

It is important to note that the baseline and endline surveys are independent population-based samples, and there may be systematic, non-random differences between participants and non-participants. As a result, observed differences between participant and non-participant groups, whether positive or negative, cannot be directly attributed to DFAP activities: the PBS is not designed to allow comparisons between participants and non-participants. In the case of the UBALE survey, approximately 35 percent of sampled households self-identified as directly participating in any project activity.[2] However, experience from past FFP surveys suggests that self-reporting of participation may not be accurate, which weakens the validity of any comparison of outcomes. The analysis has sought to present more accurate information about project participants by consulting project performance monitoring data.

3.1.3 Data Analysis

The endline indicator calculation methods are the same as those for the baseline. The data to compute the indicators were collected using a questionnaire with separate modules for each indicator topic (see

[1] As described in Appendix A of the Feed the Future Population-Based Survey (PBS) Sampling Guide
[2] The figure is 34.9 percent for food security and WASH. The percentage varies by indicator.

survey questionnaire in Volume II, Annex I). Volume II, Annex H shows the endline indicators, disaggregates and corresponding questionnaire modules.

Child stunting and underweight indicators were derived using WHO child growth standards and associated software (WHO, 2011). Household, women's, and farmer's indicators were computed following FFP guidelines (FANTA III, 2015a). Expenditures and poverty indicators follow World Bank guidelines (World Bank n.d.).

Bivariate analyses were applied to the survey data to compare changes in indicators from baseline to endline. Differences in means or proportions, as appropriate, test whether the change over time is statistically significant at levels ranging from $p<0.1$ to $p<0.001$.

3.1.4 Sample Weights

Sample weights were computed for each indicator, corresponding to a unique sampling scheme. The sample weight is the inverse of the product of the probabilities of selection from each stage of sampling (EA selection and household selection). Separate weights were derived and adjusted to compensate for household and individual non-response, as shown in Table 2. For modules that asked questions at household level (modules C, F, and H), weights were the inverse of the probability of EA selection, multiplied by the inverse of the probability of household selection, multiplied by the household inverse of the household response rate. For modules D, E, G, J and K that asked questions at the individual level, sample weights were calculated for all eligible individuals and include the inverse of the individual response rate.

Table 2: Survey Response Rates

	Number Sampled	Number Interviewed	Response Rate (%)
Households (Modules C, F and H)	1260	1186	94.1
Children 0-59 months of age (Module D)	806	712	88.3
Women 15-49 years of age (Module E)	1,191	1,031	86.6
Non-pregnant women 15-49 years of age (Module E Women's Anthropometry)	902	975	108.1
Farmers (Module G)	1,559	1,332	85.4
Primary male decision-maker (Module J)	642	538	83.8
Primary female decision-maker (Module J)	248	219	88.3
Primary male with child under 2 (Module K)	268	185	69.0
Primary female with child under 2 (Module K)	344	316	91.9

3.2 Qualitative Data Collection

3.2.1 Overview

The endline qualitative study was conducted between September 2019 and January 2020, with fieldwork in Malawi from October 23 to November 15, 2019. The study involved four data collection methods: focus group discussions (FGDs), key informant interviews (KIIs) at village, TA, district levels and with IPs and individuals in the private sector in Blantyre and Lilongwe; asset observations; and desk

review. Qualitative data collection utilized purposive sampling and semi-structured FGD and KII protocols. This section describes these methods as well as team composition and data analysis methods.

3.2.2 Sample Design

The qualitative portion of the endline evaluation was structured to assist in explaining the quantitative household survey results and to gather participant information on project activities. A purposive sample was constructed for the community selection, with the intention of including TAs that were part of the JMTR and the quantitative survey to allow data collection in these locations and better explain project results. The sample of participants and sites for field visits was also chosen purposively, based on where specific project activities had been carried out and on the performance of these activities in terms of the degree and nature of their impact.

The sample was extracted using a list provided by CRS of all communities that participated in UBALE to allow a view of the wide representation of interventions, performance on intervention implementation, and geographic coverage. The sites were selected strategically, to allow observation of observe what worked and what didn't work, and to gain insights for explaining the nature/extent of results. Site selection was done in consultation with CRS and reviewed prior to fieldwork with IPs and government officials from the three districts.

The qualitative study team collected data from all targeted districts (Rural Blantyre, Chikwawa and Nsanje), and visited 11 TAs and 25 villages where UBALE was implemented.

3.2.3 Study Team

The qualitative study team included four professionals (two female and two male) with extensive international experience evaluating food security, livelihoods, maternal and child health and nutrition, and water and sanitation interventions. One team member was a national expert who conducted project evaluations in Malawi and internationally. The team was also supported by a national team of three translators (Chichewa) (two female and one male) and four note takers (three female and one male) to support KIIs and FGDs.

3.2.4 Methods

Desk Review

The IPs provided a collection of documents to the qualitative study team, including quarterly and annual reports, training documents, field studies addressing particular initiatives of the project (e.g., managing natural resources "smart skills" manuals, financial education booklets, marketing basics, etc.), monitoring formats, and learning units. The purpose of the desk review of IP and secondary documentation was to identify key findings and explanatory factors from IP reports and internal M&E data pertaining to each of the evaluation questions. Examination of key documents before data collection assisted in the design of some of the evaluation questions. The secondary information was also used as a source of triangulation for qualitative data provided by project beneficiaries and KIIs, and to help interpret or provide explanatory context for both PBS and qualitative results.

Focus Group Discussions

The qualitative study team facilitated 50 FGDs reaching a total of 548 project participants (276 female and 272 male) with a range of stakeholders (details in Annex E). The qualitative study team used semi-structured FGD guides tailored to each respondent category. Given the breadth of interventions included in the project, the FGD guides covered a range of technical areas, and the subject matter experts on the team were given the flexibility to pursue lines of inquiry as necessary. FGD sessions with project participants were mainly conducted separately for men and women, though in some cases, depending on the topics, the FGDs were mixed. FGDs with project participants addressed their personal experiences with the project, perceived benefits from participation and from specific interventions, and motivation and likelihood of continued practice. Project participants were purposively selected based on their participation in different project activities. FGDs were also conducted with community promoters and private service providers to assess the ease with which they were able to carry out their duties, key achievements and challenges faced, and intention to sustain their promotion activities in the future. Finally, FGDs were held with members and leaders of various community committees to explore their perceptions of the project.

Key Informant Interviews

A total of 72 KIIs were conducted during the field visit (17 female and 55 male) at the community and district levels (details in Annex E). The KII guides were semi-structured and tailored to respondent type. They explored themes related to project achievements, factors that promoted or inhibited project activities and outcomes, perspectives on the effectiveness of project interventions, motivations and capacity to sustain activities, mechanisms established to foster sustainability of project interventions and outcomes, and lessons learned.

Key informants included UBALE staff, community promoters, PSPs, village heads and other traditional leaders, chairpersons of community committees, government officials at central and district levels, and USAID FFP staff. Key informants were purposefully selected based on their roles in the project or their familiarity with the project.

In-Depth Interviews

In-depth interviews (IDI) were conducted with 24 (13 males and 11 females) selected key informants and project participants to get a better understanding of how project participation impacted their health, nutrition, livelihoods and food security. These respondents were identified during site visits or through the FGDs.

Direct Observation

The qualitative study team conducted 15 site visits in the three targeted districts to observe demonstration plots, farms, home gardens, FFA infrastructure (e.g., cattle dips), homes, hygiene practices, and WASH facilities, among others. Observations allowed the team to examine how practices promoted by UBALE were applied.

Qualitative Data Analysis

During all FGDs and KIIs, notes were taken by the facilitators, interpreters, and note takers. FGDs and some of the KIIs, with participants' verbal consent, were audio-recorded. These recordings were used to check notes and provide transcriptions of the information collected. Notes and transcriptions were

uploaded into the team's internal Dropbox. At the end of each day, the study team discussed the findings and highlights from the day's sessions. Individual evaluators organized the information and data into Excel matrices organized by the categories of evaluation questions (e.g., impact, beneficiary satisfaction, effectiveness). This dataset forms the core information for this report and was used to analyze and identify strengths, weaknesses, and lessons learned in relation to each intervention.

3.3 Integration of Quantitative and Qualitative Findings

This report seeks the effective integration of the quantitative and qualitative findings. The quantitative component focused on the set of key indicators used to track the progress and impact of project interventions on the entire population within the project area, including households that participated directly in project interventions and those that did not. The qualitative findings help provide a framework for assessing impact from the perspective of the project participants themselves. Following a mixed-methods evaluation protocol, this analysis integrates the quantitative and qualitative findings. The qualitative study team triangulated the qualitative findings from FGDs, KIIs, and direct observations with quantitative data from the PBS and with the project's performance monitoring data from the FY18 Indicator Performance Tracking Table (IPTT). This information is discussed, analyzed, and incorporated in several sections in the report to interpret findings and provide support for recommendations.

The qualitative team reviewed the IPTT indicator results by Purpose, focusing on the implications of the results relative to each Purpose and their respective intermediate results. After all field data were collected, the team conducted a systematic integration of various datasets, including PBS and qualitative endline data. The team reviewed the data and used the information as a starting point for the analysis of what was learned during the qualitative study.

The integrated analysis of quantitative and qualitative data, along with consideration of other information sources, is synthesized in the report sections that address evidence of cross-integration of activities within the project. Indicator tables are presented in terms of movement between baseline and endline, while the qualitative findings provide insights into the actual changes experienced by the project participants in the context of their daily realities. These discussions, oriented around assessing the broader impacts of complementary project initiatives (intentional or not), are specifically discussed in the Findings section of this report.

Important contextual factors affecting project impact were external shocks including floods, dry spells, uneven rainfall, and market changes. These factors affected production and sales during the life of the activity (LOA) in the districts UBALE targeted, and seriously compromised food security. Few households in the UBALE project areas were untouched by shocks, with only 12 percent of households (including project participants and non-participants) reporting "no shock experienced" in the PBS survey. The rest were subjected to flood/water logging (52.2 percent), strong winds or storms (26.5 percent), crop disease or crop pests (25.9 percent), drought (23.8 percent), large rise in food prices (21.3 percent), and illness (26.1 percent), which can all affect family livelihoods and well-being. In March 2019, Cyclone Idai destroyed much of the crop in Chikwawa and Nsanje.

In this report, the quantitative and qualitative data present different assessments of project success. In part, this reflects different sampling strategies, where the endline assessed change at the population

level in the districts where UBALE was implemented, while the qualitative study involved in-depth interviews with a purposive sample of project participants. The discrepancies between quantitative and qualitative results are examined in light of the contextual factors that affect the food security of the local population. Where possible, additional information from annual surveys and other sources are introduced to assess changes among the beneficiaries who participated in the various components of the project.

3.4 Limitations

Survey response rate. Survey enumerators encountered challenges that resulted in a slightly greater non-response rate than expected. TANGO's response during survey implementation was to ask supervisors to ensure that enumerators were following appropriate protocol for locating households and conducting interviews. This included explaining the purpose of the survey through a proper introduction and ensuring households that were absent were visited at least three times. The study protocol required that enumerators not replace ineligible or non-consenting households. Based on enumerators' comments regarding conversations with neighboring households, there are three main reasons for non-response:

- Migration: Some households were vacant due to internal and external migration.
- Short-term absences: Enumerators often described short-term absences resulting from occupational, social, or family commitments (e.g., traveling to distant markets, funerals, caring for a sick relative, birth of a child) that required eligible household members to be absent during the survey.
- In rare cases, the enumerator was unable to locate the household at all. In these cases, enumerators exhausted multiple avenues to locate the household.

Interpretation of poverty indicators. In years prior to the FFP baseline survey, the Malawi National Statistics Office (NSO) worked directly with the World Bank to implement national Living Standards Measurement Studies that included poverty measurements. The NSO computed the poverty indicators for the UBALE baseline. It is likely that the baseline indicators calculated by the NSO for the Malawi FFP performance evaluation reflect the World Bank poverty indicator measurement methodology. At the time of the endline data analysis, the exact calculations used by the NSO at baseline were unavailable. Therefore, endline poverty indicators were calculated using USAID/FFP poverty indicator measurement guidelines, which are based on the World Bank methodology but may not be exactly the same as those utilized by the World Bank or those used to calculate the baseline indicators.

Evaluation timing. The timing of the evaluation was problematic because of the food insecurity at the time of evaluation activities: Cyclone Idai heavily affected harvest in the targeted areas near the end of the 2018-2019 agricultural season. Another timing challenge was that UBALE field activities finished at the end of March 2019. The endline survey was four months later, and the qualitative study seven months later, in August-September 2019. This timing and the spacing of evaluation components make it difficult to show evidence of changing practices, especially with child feeding and food security indicators, which may explain some of the differences between quantitative and qualitative findings.

At the time of the qualitative study, the majority of project staff were no longer working with the IPs in the target areas and so were not available to interview or to accompany site visits, and there were no longer

any direct UBALE-supported activities to observe. Although IPs made efforts to reach out to former project staff to connect them with the study team for interviews, many senior project staff had left the country or engaged with other activities and were thus unavailable.

However, IPs organized meetings with former employees, and with current employees working in other areas. The team was also able to Skype with key Project Management Unit staff on several occasions to discuss results, activities, and challenges. Fortunately, at the government and village level, most officials and committee members had participated in UBALE and the team was able to talk with them: the IPs coordinated with local government officials to schedule meetings and visits to selected communities. In sum, the qualitative study team spoke primarily to government officials who implemented the project, IP management and monitoring staff, and project participants.

Although the study team was not able to observe examples of all project activities because the project had finished, it was possible to obtain a strong understanding of the outputs and results from the project. The team was able to see activities that are continuing after the end of the project and discuss with participants how these activities were implemented, their opinions and observations.

Access to some project documentation. The evaluators were limited during the inception, fieldwork, and analysis phases by a lack of access to relevant project documents including field reports, community profiles, training manuals, and other external materials that would have assisted the evaluation. Since the project had ended by the time of the evaluation, documents were not available or were difficult to acquire. The qualitative study team obtained a number of internal project documents and manuals only after it had begun its field interviews and during the report revision phase.

4. EVALUATION FINDINGS

4.1 Targeting

UBALE's targeting was effective in achieving project objectives and reaching female and male farmers, PLW with CU2, and members from different community- and district-level committees in the three targeted districts. Working through government and village committees guaranteed that project activities were implemented in all 264 Group Village Heads (GVHs) in the target areas. However, the selection process had to be adjusted after project activities started and the number of potential participants was higher than expected. Because funding levels were not modified to cover the expanded number of potential participants, the selection process was adjusted to identify the most vulnerable people in the target areas. TAs community leaders helped select beneficiaries based on criteria for each intervention.

The targeting mechanism and criteria for Purpose I were diverse. The project was designed to build the capacity of government extension services to reach all potential participants. This was a challenge since the number of farmers was larger than expected and not all were able to benefit directly from UBALE's agriculture activities. However, all individuals who met the criteria had access to marketing groups and saving and lending groups. The project paid special attention to training poor female farmers. IPTT data show that the number of poor female farmers increased annually, resulting in a higher-than-expected number of female farmers applying improved technologies in FY18 on crop genetics (35,802), cultural practices (35,600) and post-harvest handling and storage (12,440) (CRS Malawi, 2018a [IPTT data]).

The main targeting criterion for Purpose 2, in line with the first-1,000-days approach, was to reach all PLW and CU2 in the project communities. Over the LOA, UBALE succeeded in achieving high coverage, registering 98 percent of pregnant women (CRS Malawi, 2019) and providing food rations to 106,003 women (84 percent of LOA target) and 232,149 children (112 percent of LOA target) (CRS Malawi, 2019b [IPTT]).[3] Once community registration was completed, the project found more children than anticipated in the proposal, and targets were revised upwards—yet were still exceeded.

WASH activities were self-targeting. Mapping was done at the beginning of the project, and water points and their committees were targeted based on whether the borehole was functional or not and whether a committee had been trained or not. Across the targeted districts, 1,200 water points and water point committees (WPCs) were targeted in the project design; government officials interviewed by the study team estimated actual project coverage at 30 percent.

For Purpose 3, UBALE targeted all communities within the impact area. The FY19 IPTT reports that UBALE reached all targeted village committee members in all 264 GVHs (CRS Malawi, 2019 [IPTT]).

[3] These data are from Indicator 2.16 from the FY19 IPPT because the denominator includes the revised targets. The numerator is the same as indicator 57. The data for PLW are from FY19 ARR page 10, which quotes annual survey results.

The types of the activities promoted by UBALE were appropriate and relevant to the needs of the target population, as interventions were implemented through government structures and within government plans and policies. The study team observed that many interventions continued even after project end.

The study team discussed with different committees and participants how communities, activities and participants were selected and the support they received from UBALE during the life of the project. Based on these discussions, Purpose 1 activities clearly supported communities in the preparation phase as well as *Recover, Build,* and *Grow* phases. During FGDs, project participants mentioned several activities that helped them to plan for droughts and floods, and also how UBALE supported them to rebuild and grow their farming activities. Activities from Purposes 2 and 3 were oriented to build and grow communities' capacity to identify needs and actions, and to implement necessary activities.

4.2 Purpose 1: Vulnerable Households Increase Income

The overall objective of Purpose 1 was to assist smallholder farming households to "sustainably increase productivity of nutritious and profitable farm products" (CRS Malawi, 2014). Activities in support of Purpose 1 focused on improved farm management and business planning practices (Sub-purpose 1.1); the formation of marketing groups to increase agricultural sales and obtain better prices (Sub-purpose 1.2); greater access to sustainable financial resources (Sub-purpose 1.3); skills training for small-scale businesses (Sub-purpose 1.4); and the promotion of gender equality and greater shared decision-making among men and women.

The study team found that Purpose 1 activities were appropriate to participant needs. In line with the integrated nature of project activities, agricultural interventions under Purpose 1 increased the production of nutritional foods needed to achieve Purpose 2 objectives; supported women and men to make decisions together; increased income and savings; and provided options to farmers and communities to improve their resilience by incorporating agriculture technologies that increase yield and sustainability. The integration of Savings and Internal Lending Communities (SILCs), gender, and marketing and crop production techniques created a supportive environment for farmers to increase food production and income. The SILC groups have been very successful and are an important source of loans for participants. A Savings and Credit Cooperative Organization (SACCO) was established but at the end of the project faced significant challenges to its sustainability.

4.2.1 Sub-purpose 1.1: Farm Management and Business Planning Practices of Vulnerable Farming Households Improved

Capacity Building

UBALE aimed to improve smallholder management of their farming systems through information on better production methods and climate-change responsive farming practices. The project strengthened the capacity of the government agriculture extension staff, who in turn worked with Lead Farmers to demonstrate and disseminate improved farming practices. Diversity and Nutrition for Enhanced Resilience (DiNER) fairs were organized to encourage farmers to diversify their crops using high-quality hybrid seed and reached 44,227 households over the LOA (CRS Malawi, 2019). The formation of SILC groups was facilitated to promote access to savings and credit.

Capacity building under UBALE had the dual purpose of strengthening farmers' knowledge and the skills of Ministry of Agriculture, Irrigation and Water Development (MoAIWD) staff, notably through Agricultural Extension District Officers (AEDOs). Farmer training under UBALE was delivered mainly through the AEDOs. This was an effective means of strengthening government service channels to the extent that farmers sometimes thought that UBALE had not provided services, as they only saw the government agents. AEDOs received training in a variety of agricultural techniques. Several AEDOs interviewed said that training was a combination of refresher training and new information (e.g., green manure, multiplication of NUA bean seeds), and expressed appreciation for the training. Project staff noted that the collaboration with MoAIWD has been very successful, but that there is a low AEDO-to-farmer ratio, with AEDOs supporting 1,000 or more farmers in their areas.

Under UBALE, the AEDOs were responsible for capacity building of project participants. According to one AEDO interviewed by the qualitative study team, AEDOs helped lead farmers organize demonstration plots and demonstrations, organized and mobilized people for field days, distributed farm inputs like seeds, fertilizers, and pesticides, and mobilized and organized farmers. The result has been a shift from reliance on local maize and sorghum to more diversified crops including faster-maturing hybrid varieties of maize, beans, cowpeas, sorghum, and orange-fleshed sweet potato (OFSP) that allow people to produce crops even during dry spells. AEDOs were provided computer tablets to record data for the project, but both AEDOs and District Agricultural Development Officers (DADOs) reported that UBALE did not share data analysis to help them track results. The study team found in interviews and site visits that there was high acceptance of innovative technologies that combined sustainability and increased yield; the use of low-cost and simple technologies that could be easily adapted by farmers contributed to this strong uptake.

Effective UBALE practices:

- **Mixed cropping (improved soil fertility from maize/groundnut intercropping, pigeon peas and Gliricidia leaves; better moisture retention in soil)**
- **Demonstration plots (easy place for farmers to learn; helped spread different technologies)**
- **Improved technologies (Sasakawa technique, mulching, soil conservation, manure making, pit farming)**

Demonstration plots were a major means of disseminating improved agricultural techniques and messages to help farmers mitigate the effects of climate change. Respondents in FGDs and KIIs considered the use of large ("mama") 0.2-hectare plots tended by lead farmers and smaller ("baby") 0.1-hectare demonstration plots an effective means to reach large numbers of farmers. Mama and baby demonstration plot owners related that they coordinated their work to make sure messages reached project participants. People who were not directly participating in UBALE were also given the opportunity to learn from demonstration plots, and messages were further shared with non-participants during community meetings.

Adoption of Improved Agricultural Practices

The UBALE project reported 76,042 farmers applying at least one improved practice in FY19, mainly the use of improved seeds and cultivation practices to increase water retention and improve soil. The number of farmers and others who applied improved technologies or management practices as a result of USG assistance far exceeded project targets: 22,626 male farmers (175 percent of target) and 23,392 female farmers (412 percent of target) in FY17, and 34,785 male farmers (203 percent of target) and

37,218 female farmers (499 percent of target) in FY18 per IPTT data.[4] This is consistent with the increase in the number of hectares cultivated under improved agroforestry, conservation agriculture, and watershed management practices in the same period.[5] The study team also observed female farmers using project-promoted cultivation practices and improved seeds after the end of the project, which supports the increase of hectares under improved technologies reported by the UBALE project.

During FGDs and KIIs, the study team heard about these practices from farmers and how the changes created considerable impact on food production and food availability. Farmers indicated that as result of applying these technologies, they can produce more food with less chemical fertilizer. Lead farmers interviewed by the study team in Chikwawa district confirmed that yields have improved with the adoption of technologies promoted by UBALE. For example, they said that some farmers are harvesting seven to eight 50-kg bags of maize from the same piece of land where they previously harvested two-and-a-half bags, and that some households who had adequate food for only seven months of the year now have eleven months. FGD participants in another GVH in Chikwawa said that their yields increased three-fold as a result of the techniques learned from demonstration plots; they expect crop yields to increase further as they plant more *Gliricidia* to retain soil, increase organic matter and fix nitrogen, and as they multiply more seeds of other different species. However, the lead farmers said that demonstration plot inputs from UBALE were delivered a month late in the 2016 and 2017 growing seasons, after farmers had planted their crops, which reduced crop performance in the demonstration plots and may have slowed adoption.

The FY19 Annual Results Report (CRS Malawi, 2019) reported 132,637 households implementing targeted risk reduction practices with increased capacity to adapt to the impacts of climate variability.[6] Six months after the project ended, the study team observed several improved practices being implemented including Conservation Agriculture with Trees (CAWT), live and dead barriers, and mulching.

> ***Despite drought and dry spells, we appreciate . . . that the technologies we learnt are yielding good results.***
>
> - **VDC chair, Nsanje**

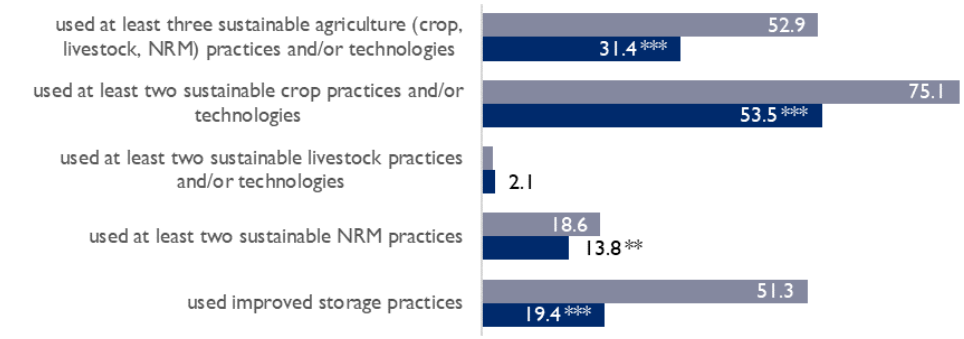
External shocks including floods, drought, dry spells, pests (e.g., fall armyworm) and market changes affected farmers in southern Malawi throughout the LOA. The PBS endline data show a reduction in the use of sustainable agriculture practices and improved storage by all farmers in the three districts. Figure 1 presents findings on rates of adoption of improved practices at baseline and endline. A decrease of 22 percentage points occurred from baseline to endline for two indicators: (1) percentage of farmers who used at least three sustainable agriculture practices and/or technologies in the past 12 months and (2) percentage of farmers who used at least two sustainable crop practices and/or technologies in the past 12 months. The largest decrease is in the percentage of farmers using improved storage practices, which decreased almost 32 percentage points from baseline to endline. Some of the decline in adoption of improved practices could be explained in part by the timing of the quantitative survey: Cyclone Idai destroyed a promising harvest in Chikwawa

[4] IPTT Impact Indicator 9: Number of farmers and others who have applied improved technologies or management practices as a result of USG assistance
[5] IPTT impact indicator 15: Number of hectares under improved technologies or management practices as a result of USG assistance
[6] Indicator 13.

and Nsanje near the end of the 2018-2019 agricultural season. The survey took place just a few months later, in August-September 2019, a few months before the subsequent planting season.

Figure 1: Agriculture indicators – adoption of improved practices

Four out of five indicators declined from baseline to endline



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

In addition to weather and market shocks, another factor that may have influenced low adoption rates was the timing of agricultural activities. UBALE began in October 2015, and new activities were introduced after farmers had decided what to plant for the 2015/2016 season; farmers would have tried new techniques introduced by UBALE in the 2016/2017 and 2017/2018 crop production seasons. UBALE ended activities in March 2019, before the end of the growing season. Therefore, farmers had only two to two-and-a-half growing seasons to understand and apply new practices and assess the results. The misalignment between the start-up of project activities and the agricultural cycle means that adoption of new agricultural practices would not occur until Year 2 and Year 3 (or Year 4 for later-adopting farmers), and potential gains in some agricultural outcomes could not be realized until well into the third year of implementation.

Improved Storage

Along with emphasizing increased production, UBALE promoted improved storage through the use of Purdue Improved Crop Storage (PICS) bags. The PICS project, an activity of the Bill and Melinda Gates Foundation, supported the local manufacture of a long-lasting, low-cost storage method that protects grains from post-harvest losses and aflatoxin contamination, which are common problems in Malawi. The manufacturer in Malawi was Polypack Limited. Polypack worked with distributors who in turn had a wide network of agricultural input shops, mostly at district level and often far from UBALE's remote rural communities. As of the end of 2019, the manufacture of the PICs bags moved to Tanzania and Polypack Limited is now a distributor.

UBALE promoted the PICS technology in project villages; Purdue University provided capacity building for extension agents and for the development of the supply chain. The advantages of using PICS bags to protect stored grains were demonstrated, and bags were distributed to marketing clubs and lead farmers and promoted at DiNER fairs. According to UBALE staff, the development of the supply chain began after the project started, and UBALE staff were requested to identify small vendors to sell the bags. UBALE staff also reported that there were not many established vendors for PICS bags in the project districts during the LOA, though farmers could buy from several sources, including small-scale

vendors near some communities, government extension workers, and entrepreneurs who resold the bags directly in communities, or directly from the manufacturer.[7]

Tufts University conducted a multi-year survey among members of UBALE's agricultural marketing clubs on farmers' willingness to pay for PICS bags instead of traditional woven plastic bags, which are cheaper but less protective. The study concluded that, after two-and-a-half years of demonstrating PICS bags, the promotion efforts were successful in increasing market demand for the hermetically sealed storage bags among UBALE farmers. Further, the use of the PICS bags was adopted by farmers who had not attended demonstrations but saw their neighbors using them (Masters and Alvarez, 2019). Participants in qualitative interviews confirmed that they used the bags with good results, but many had not purchased their own bags due to cost and availability. It should also be noted that after Cyclone Idai in early 2019, farmers had suffered a loss of crops and income that may have affected their purchasing decisions.

SILCs are a catalyst for farmers to invest in their homes, farms, and their family's future. Loan money was used to:

- **Build new houses**
- **Improve homes (iron sheets for roofing, cement floors)**
- **Strengthen houses to withstand floods**
- **Wire electricity to houses**
- **Pay school fees for children**
- **Purchase livestock**
- **Buy farm inputs**
- **Purchase household goods**
- **Buy maize to keep for lean season**
- **Start small businesses (e.g., making and selling food)**

Natural Resource Management

As part of a comprehensive approach to improving crop production, UBALE provided FFA and basic tools to promote natural resource management (NRM) among community groups.

The project partnered with the GoM Forestry Department, which provided training that included the establishment of tree nurseries, tree planting, erosion control, and the formation of bylaws for forest use. Beekeeping was added to reinforce the importance of preserving trees. Focus groups in different communities expressed general satisfaction with the NRM training and the results but complained that they were not paid the FFA on a timely basis. One NRM group in Chikwawa district said the tools and information on proper planting and care techniques UBALE provided increased the effectiveness of their existing riverbank flood control efforts. When the tree species introduced by UBALE did not perform well, the community identified trees better suited to the area. The group voiced confidence that their NRM efforts will continue, aided by a plan developed under UBALE that will help them to monitor the number of trees planted and their survival rates. FGDs said that free-roaming livestock and termites are the greatest threat to nurseries and new trees (as well as to demonstration plots). Communities have taken steps to control livestock and have worked with the Forestry Department on mitigation measures for termites with varying degrees of success.

SILCs

In addition to supporting farmers to increase production and yields, UBALE sought to help households establish an asset base for investment and other activities through SILCs. SILCs successfully provided a mechanism for poor households to save money and to access credit. The project trained and certified

[7] Email communication with UBALE project staff, April 14, 2020

PSPs in skills that included facilitating group formation, training and capacity building, linking SILCs and marketing groups, resolving group conflicts, and linking SILCs to the BNC SACCO.[8]

One of the objectives of the SILCs was to increase women's access to and control over income. As of September 2018, UBALE had formed 3,699 SILC groups comprised of 86,224 participants (75.1 percent female) with over USD 1.4 million in savings and nearly USD 1.2 million in outstanding loans. The return on savings was reported at 38.1 percent (CRS Malawi, 2019). Project staff reported that data are not consistent after September 2018 as one partner dropped their field staff for the final year, and other partners began laying off staff in March 2019 (CRS Malawi, personal communication, 2020).

Male-only SILC groups were formed to avoid the perception that SILCs were for women only. The majority of SILC members are women. Female SILC members in Chikwawa shared their opinion that men's groups usually disbanded due to disagreements and because "men are natural loan defaulters." The UBALE project did not record defaults, as the staff said defaults rarely happened in SILC groups and the money is eventually recovered, with people who are late on loans usually repaying before a share-out. When members did fail to repay, it was often due to a poor business idea, businesses not going as planned—especially during emergencies, or because groups forced members to borrow when they did not want a loan. Many female SILC members proudly told the qualitative study team that they had bought livestock with their loans, making some of them first-time livestock owners.

UBALE used the Private Service Provider (PSP) model introduced under the Wellness and Agriculture for Life Advancement (WALA) project for SILCs and for marketing groups. The SILC PSPs train and guide the SILCS and supervise group payouts, for which they are paid a small fee. SILC PSPs have been successful under UBALE; in Chikwawa and Nsanje districts, the study team found some SILC groups established under WALA (which ended in 2012) still functioning under UBALE. In FGDs, SILC members acknowledged the value of their PSPs, and all groups interviewed by the study team are paying their PSPs. Additionally, PSPs confirmed that they continue to form new SILC groups well after the end of UBALE project activities, which is a positive indication of the sustainability of the activities. PSPs stated that women and men have equal opportunities to become PSPs; one PSP association in Chikwawa told the study team that of the group's 24 members, 13 are female and 11 are male. The association plans to register as a business entity with the Registrar General, which members said will protect its identity and the continuity of its service provision. This association is a member of the BNC SACCO and members said they are working with local leaders to recruit for the SACCO; so far, members know five other PSP associations that have joined the SACCO.

One of the challenges PSPs noted is that different organizations working in the same area provide conflicting messages about the role of the PSPs. Some NGOs tell the savings and loan groups not to pay their PSPs which, according to one PSP association, led some communities to think that the UBALE PSPs are trying to steal from them.

SILC PSPs have formed their own associations, which were supposed to be registered with the government by the end of the project, though this was still pending at the time of the qualitative study. This is an important activity to pursue, as SILC PSPs (and marketing PSPs) are not part of the formal structure of government; registration would give them more formal standing. Despite the delay in

[8] See full discussion of the BNC SACCO under Sub-purpose 1.3

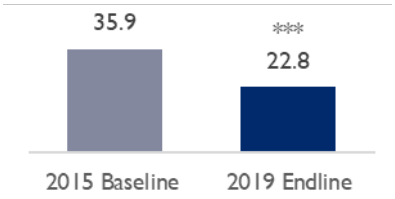
registration, SILC PSP associations are recognized by the District Development Councils (DDCs) and its members attend DDC meetings, providing a sustainable link to district government. UBALE SILC practices conform to government guidelines, which CARE Malawi initially helped the government to develop and which enhances the sustainability of the SILCs.

4.2.2 Sub-purpose 1.2: Marketing Club, Cluster and Association Members' Agricultural Sales Increased

As a complement to expanded production, UBALE assisted farmers to organize to sell collectively, access local and international markets, negotiate better prices, and build sustainable market connections for selected value chains, as well as form higher-level marketing clusters and marketing associations.

Figure 2: Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months

The percentage of farmers practicing promoted value chain activities decreased from baseline to endline.



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Value chain activities are designed to improve the quantity and quality of a product destined for the market to generate greater profits. The value chain activities promoted by UBALE include use of financial services; use of training and extension services; trading/marketing produce through marketing groups, agro-dealers or community association; use of a warehouse receipt system; use of market information services (NGOs, government, PSP, mobile); use of business development services; use of insurance services; and planning and profit calculations. Endline results show a statistically significant decrease in the percentage of farmers who in the year prior to the survey practiced value chain activities promoted by UBALE; there was a greater decrease among female farmers compared to male farmers (15.2 versus 11.2 percentage points, respectively) (Annex F).

One explanatory factor for the decline in farmers practicing promoted value chain activities is the project's experience with the pigeon pea value chain. UBALE identified pigeon pea in its value chain analysis and subsequently heavily promoted it with participants at the beginning of the project. Project participants produced in quantity and in FY16 successfully sold 153 metric tons of pigeon pea (CRS Malawi, 2016). Unfortunately, in 2017 the Malawian pigeon pea market was undercut by bumper crops in India and China, two of its main markets, and by a protectionist import ban by the Indian government. This left many Malawian farmers with no market that year. As one key informant in Chikwawa noted, farmers harvested 250 tons of pigeon pea in 2018 but could not sell it; as a result, farmers were frustrated and stopped growing pigeon pea.

In line with its focus on strengthening and leveraging local capacity, UBALE partnered with the National Smallholder Farmers' Association of Malawi (NASFAM) to increase farmers' access to markets through organized marketing clubs. NASFAM is a smallholder-owned membership organization that seeks to increase the productivity and commercial capacity of its members. NASFAM staff delivered

comprehensive training in club formation, business planning, and marketing; supervised the clubs; and initially acted as liaison between clubs and buyers.

UBALE-supported marketing clubs interviewed by the study team confirmed that they have benefitted from marketing training under UBALE and that through collective marketing they are successfully selling a larger volume of crops for a higher price; for example, one club sells sesame at MWK 800/kg whereas if farmers sold individually they would receive only MWK 600/kg. One marketing club in a remote location told the study team that when production in the area is good, buyers do not honor their promises to buy from them. This is because the buyers can purchase crops from more easily accessible locations with lower transport costs. In that case, the farmers in this remote location have little choice but to sell to local vendors at a lower, often unsatisfactory price.

Marketing clubs successfully formed Marketing Associations, enabling the sale of larger quantities sought by national and international buyers. In contrast to the quantitative PBS data, under UBALE five marketing associations with 1,172 farmer-members (528 female, 644 male) earned over MWK 83 million on sales of value chain commodities (green gram, sesame, red beans) in the 2017/2018 season.[9]

UBALE used marketing PSPs as a service delivery model. The marketing PSPs strengthen a market orientation among farmers and provide a sustainable link between farmers and commercial markets. Under this model, marketing PSPs identify potential buyers, link farmers' marketing clubs and buyers, and help negotiate prices; in return, they are paid a fee for their services. The payment for service is an important facet of sustainability in the model. In FGDs and KIIs, the study team learned that payment varies by club according to their assessment of whether the PSP provides an essential service. Most of the marketing clubs interviewed value their PSP and are paying them. However, some clubs are not, especially when crop production is poor, and a few marketing clubs still expected UBALE to pay the PSPs, raising the question of whether these clubs will be able to maintain collective marketing benefits in a sustainable manner. A marketing PSP in Nsanje said that his payment varies according to whether the season is good or bad, and that some participants were not interested in PSP services because they know other organizations in the area will offer free services. One challenge raised by the PSP is that the uncertain payment makes it difficult to pay for transport and limits their ability to cover a larger area.

One of the main challenges faced by marketing clubs, according to NASFAM, is a lack of storage facilities for aggregated crops. A storage facility would keep crops in good condition and allow buyers to purchase from one location, reducing buyers' fuel and labor costs and thus help the club attract buyers. Unfortunately, storage facilities were not included in the UBALE budget.

NASFAM staff told the study team that after a cautious reception, farmers now understand the concept. Most marketing groups can connect with buyers and negotiate prices. However, clubs need time to mature to become more effective and to eventually conclude binding contracts with buyers. As with the agricultural activities, the marketing clubs, formed in 2016, had a short timeframe to gain experience in collective marketing. The short timeframe was further compromised by floods and dry spells in 2017/2018, and UBALE closed in the middle of the 2018/2019 growing season.

[9] Raw sales data from Blantyre Rural, Chikwawa and Nsanje 2017/2018 season, provided to study team by UBALE project staff.

At the time of the qualitative study, marketing associations were undergoing formal registration with the GoM, an important step as NASFAM is no longer supporting them after the close of project activities. One NASFAM key informant suggested that UBALE could have linked its seed multipliers to NASFAM, which provides farmers free seed and would offer a more permanent market than selling to local buyers and NGOs.

One design limitation in the project's approach to agriculture is its standardized approach to crop promotion along selected value chains across the three districts, though agro-ecological zones vary widely within districts. One lead farmer near Nchalo in Chikwawa District said that pigeon pea was promoted there, though it is not a preferred crop and the weather is not conducive to growing it in that area. Another issue is that given the unpredictable rainfall, an irrigated farming component, where feasible, would have been useful for drought-stressed farmers. A third area to address is livestock management. Livestock is a prominent feature in Nsanje district in particular, but the livestock sector was not addressed by the project except through FFA support to build dip tanks. At the time of the qualitative study, the government was organizing farmers to mobilize money to buy the necessary chemicals for the dip tanks. However, there was some miscommunication around this issue, as a number of groups told the study team that UBALE was supposed to buy the dip chemicals but had not done so. This expectation may have been based on past projects where more inputs were provided to groups.

4.2.3 Sub-purpose 1.3: Members of Marketing Clubs, Clusters and Associations Increased Use of Sustainable Financial Services

Agricultural financial services, along with other interventions, were expected to directly benefit households and lead to increased food security. The endline PBS found that about three in ten farmers across the survey area were using financial services at endline (Figure 3). At the population level, there was a statistically significant decrease from baseline to endline in the use of financial services among all farmers, including female farmers.

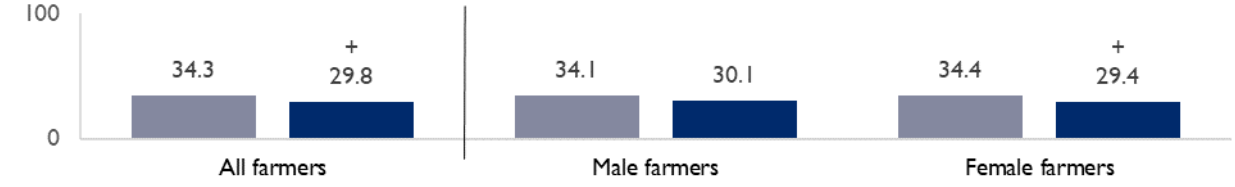
The PBS data indicate that the positive project result for loans does not appear to have had a broader effect at the population level. One explanation for this is that heavy rainfall and flooding in March 2019, prior to the quantitative survey in July-August, destroyed crops and assets in southern Malawi and may have influenced the apparent lack of growth in this indicator. Farmers suffered a significant loss of production and income, which would have reduced their ability to save money or to take out loans and required people to use their savings to meet their emergency needs (FEWS NET, 2019b).

Of the farmers in the endline PBS survey who responded that they had agricultural savings, the majority kept their savings in SILCs (total: 22.2 percent; 20.5 percent male; 24 percent female); 2.2 percent kept it banks (3.4 percent men; 0.9 percent women); and 3.0 percent used mobile phone banking (4.1 percent men; 1.9 percent women).[10]

[10] The data presented in this paragraph are not shown in tables/figures in this report; they are from additional analysis by TANGO.

Figure 3: Percentage of farmers who used financial services in the past 12 months

Use of financial services by farmers declined from baseline to endline



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

The PBS data indicate that the percentage of farmers who took credit from any source did not change from the baseline. Farmers associations and cooperatives were the only statistically significant source of agricultural credit, with 0.6 percent of farmers using this source (1.0 percent men; 0.1 percent women) (p<.01). However, among UBALE participants, the project exceeded targets for agricultural and rural loans. More loans from SILCs went to men (154 percent of target) than to women (69 percent of target) (CRS Malawi, 2019 [IPTT]), indicating that SILCs formed under UBALE were an important source of credit for men as well as women, who constitute the majority of members. The SILC groups loaned USD 1,123,873 in FY19.

With the success of the SILCs and marketing clubs among UBALE participants, in FY16 UBALE and partner NCBA CLUSA International began to look for financial institutions to give UBALE participants access to more diverse financial services than those provided by SILCs. An assessment by NCBA CLUSA found no interest from financial institutions; consequently, in FY16 NCBA CLUSA engaged the Malawi Union of Savings and Cooperatives (MUSCCO)[11] to identify an alternative (CRS Malawi, 2016a). By FY17, this idea evolved into establishing the BNC (Blantyre, Nsanje, and Chikwawa) SACCO (CRS Malawi, 2017a) based on the assumption that enough project participants would become active members to ensure the institution's financial sustainability. With technical support from NCBA CLUSA, the BNC SACCO met government operating standards and began offering services in October 2018, a few months before project activities ended.

The BNC SACCO has a board of directors and offices in Nchalo and Chikwawa districts and in Nsanje town. Members include marketing cooperatives, producer cooperatives, individuals, and 200 SILC groups. According to board members, the BNC SACCO had nearly 2,800 members (63 percent female) and over USD 41,000 in assets at the time of the qualitative study. Membership is increasing (11 percent in the first half of 2019), though board members have very limited funds for outreach. The SACCO offers savings and fixed deposit accounts; personal, agricultural, and business loans; and mobile money. Board members said that they would connect to a mandatory government microfinance hub in December 2019 to automate operations and offer greater access to mobile money services. In the qualitative interview for this evaluation, board members and staff appeared sincere in their efforts to ensure the growth and sustainability of the SACCO while acknowledging that they faced significant challenges. Board members told the qualitative team that they were seeking one to two years of external donor support to fund operational costs until the SACCO is viable, an endeavor that became more difficult after UBALE closed.

[11] MUSCCO is the national union of SACCOs in Malawi, with which all SACCOs must be affiliated.

A number of SILC PSP associations belong to the BNC SACCO, and SILCs and marketing groups see the SACCO as a secure place to keep their money. However, several SILC groups told the study team that they had little information on the SACCO, despite PSPs insisting otherwise. Since PSPs derive income from supervising SILC payouts and resolving disputes, there is a potential conflict of interest between the PSP role and the membership of individual SILCs in the BNC SACCO.

After one year of operation, the BNC SACCO had not generated the projected demand for its services from its target market (World Council, 2019b), one of several factors that threatened its viability at the end of the project. The institution was set up by CLUSA without much direct engagement with other UBALE partners, who could have provided a broader information and recruitment network before the project ended. The BNC SACCO pays a lower interest rate on savings than the SILCs and there are competing microfinance institutions (and mobile money) with similar services in the area. The failure of a different SACCO two years ago has made many people mistrustful of SACCOs. Additionally, PSPs and SACCO executives reported that many groups live far from the BNC SACCO offices and lack money for transport. The SACCO does offer mobile banking through Airtel, but PBS data shows that only 3 percent of those surveyed use mobile phone banking, less than half of whom are women.

By mid-2019 it was evident that the BNC SACCO was not sustainable without external financing. The SACCO's sustainability was a concern not only for the effective use of donor funds, but also for the effect a default would have on members' ability to withdraw their savings and for community trust in financial institutions. CRS and NCBA CLUSA worked with the SACCO to redevelop its business plan to determine what kind of future support the SACCO would need. USAID engaged the World Council of Credit Unions (WOCCU or World Council) to assess the BNC SACCO's performance. WOCCU identified a number of financial and management issues threatening the SACCO's sustainability, including expenses that exceeded income every month, a costly business model, the absence of a sustainable financing plan, and internal governance and management weaknesses. The WOCCU assessment found that two other SACCOs in the same districts were also having serious financial problems, including one that had served as a model for the BNC SACCO. WOCCU was also informed by the Reserve Bank of Malawi that community-based SACCOs in general were performing poorly (World Council, 2019a, b).

As a way forward, WOCCU recommended that the most viable option for sustainability was for the BNC SACCO to merge with FINCOOP, a larger SACCO (World Council, 2019a). However, before WOCCU's recommendations could be put into place, MUSCCO obtained funding to support community-based SACCOs in Malawi from the International Fund for Agricultural Development (IFAD). This included a subsidy of MWK 1 million per month (approximately USD 1,359) to the BNC SACCO to strengthen its growth and institutional sustainability (World Council, 2019b). Based on WOCCU's analysis of financial issues, it is not clear that this additional funding will be sufficient to sustain the institution without significant growth in membership and in the loan portfolio (World Council, 2019a). While the financial support is important, it is also critical that the BNC SACCO address its management and membership challenges in order to become a sustainable institution. Without the IFAD/MUSCCO support, the BNC SACCO's risk of failure is very high, and it is unclear whether the IFAD support will continue long enough for the BNC SACCO to address its financial challenges and become a sustainable institution. If that does not happen, WOCCU's original suggestion to merge with FINCOOP can be revisited. CRS has acknowledged that it should have done more research and examined feasibility requirements during the

planning stage and recognized that a three- to four-year timeframe for sustainability would have been more realistic (CRS Malawi, 2019).

4.2.4 Sub-purpose 1.4: Selected Individuals Establish/Strengthen Businesses

One of the small businesses supported by UBALE was the multiplication of certified seed, an activity under Purpose 1.1 that linked to Purpose 1.4. Seed multiplication groups were given sorghum, soya, NUA beans and OFSP. Farmers obtained their seeds mainly from seed fairs, exchanging vouchers for non-GMO seeds of their choice from vendors. Farmers could choose either hybrid or Open Pollinated Variety (OPV) seeds, and the project enlisted inspectors from the government Seed Control Services to ensure that the seeds offered at the fairs met the same quality certification requirements as seeds sold on the open market. Hybrid seeds give higher yields but need to be bought annually. According to project staff, hybrid seeds were purchased by farmers who had enough income to do so. The OPV seeds are not as high yielding but can be used as foundation seeds and multiplied, making them an economical alternative for poorer farmers. UBALE staff said that the distribution of OPV seeds also provided foundation seeds to the wider community for seed multiplication.

Farmers engaged in seed multiplication in Chikwawa told the qualitative study team that they sold 1,800 kg of sorghum seed to UBALE at MWK 500/kg in 2018 and were able to sell seeds at a higher price than grains. The FGD members estimated that 75 farmers in their area in Chikwawa were engaged in seed multiplication now. Overall, seed multiplication has been successful except for soya seed, introduced by UBALE, as farmers said the weather was not conducive to growing soya. Marketing PSPs link seed multipliers to potential buyers from Blantyre.

One AEDO in Chikwawa district stated that under UBALE, seed multiplication groups have increased greatly, which has improved the accessibility of seed (sorghum, OFSP, NUA beans). Local farmers are buying seeds from the groups at a lower price than from agro-dealers; for example, NUA beans are sold by agro-dealers at MWK 2000/kg but farmers get the same seed from seed multiplication groups for MWK 1,000/kg. During the qualitative study, six months after project activities had ended, the AEDO reported that seed multiplication groups were still operational and that the previous day he had organized a market survey with farmers and identified potential seed buyers with large orders to fill.

UBALE emphasized youth participation, and all activities were open to youth (defined as age 18 to 35). Many of the PSPs are youth who were deliberately targeted, in part to provide young people with income-generating opportunities; one NASFAM KII confirmed that 80 percent of marketing PSPs in his area were youth. UBALE worked with Youth Clubs formed by the Office of Social Welfare. These were important to disseminating key messages to the community on health, nutrition, sanitation, teen pregnancy and early marriage, school dropout prevention, and gender. One Youth Club in Nsanje has established a SILC and members are operating individual income-generating activities (e.g., hairdressing; selling chickens, rice, and sweet beer) and with the aid of loans have purchased bicycles, goats, and assets for their homes. Some clubs planted trees and helped elderly people to build sanitation facilities. However, Youth Club members told the study team that they felt the number of training days was too little; most training ranged from two to three days (except gender, which was five days) which they felt was not sufficient.

Beyond disseminating messages and some public service activities, there was no clear agenda to support the needs of youth; for example, there were few organized efforts under UBALE to assist young people to identify and develop the type of off-farm income-earning opportunities that are important to their future. As a result, few youth were motivated to join the youth clubs as they did not see any benefits. The study team sees this as a missed opportunity, especially as rain-fed farming becomes a less reliable livelihood due to climate change.

UBALE also supported MoAIWD to train Community Animal Health Workers (CAHWs) to support farmers on improved animal housing, feeding, disease detection, deworming and some vaccinations as a means of building community capacity in livestock management. The CAHWs are managed by government Assistant Veterinary Officers. The CAHWs were supposed to be certified as paravets by MoAIWD after additional training. Because certification would mean that paravets could be moved outside of the districts, MoAIWD—in the interest of maintaining capacity in the districts—was hesitant to certify the CAHWs as paravets (CRS Malawi, 2017a). This was resolved when the three DADOs in the UBALE project area certified the CAHWs to work within their respective districts.

The CAHW model also bases its sustainability on a fee-for-service model, where community members buy vaccines and pay the CAHWs to administer them. FGD participants appreciated the CAHW services and told the study team that this has reduced animal deaths. Not all groups are paying for the service, raising the issue of sustainability. While some CAHWs say they will continue to work on a volunteer basis for the community, others purchase the vaccines and add a small fee to cover their services. CAHWs noted that storage for the vaccines is a major challenge, and that UBALE did not provide starter packs, which would have made it easier for them to establish themselves.

4.2.5 Sub-purpose 1.5: Joint Decision-Making at Household Level Improved

Gender sensitization under UBALE has fostered better relationships at home and opened new avenues for women's civic participation, especially in VDCs. The qualitative study team found a high level of awareness of the importance and benefits of gender equality, and a high degree of participation by women in the different committees at village, GVH and district levels. Focus groups and KIIs with women and men confirmed that women were given equal opportunity to join UBALE activities. Many of the gender dialogues were led by Gender Champions trained and certified under UBALE beginning in late 2016 (CRS Malawi, 2016a), and supported by local leaders such as the VDC.

Gender dialogues were well integrated across UBALE activities, including SILC group meetings, marketing group meetings, and VDC meetings. Gender equality messages were reinforced by CGVs, and by Health Promoters and Health Surveillance Assistants (HSAs) in ANC clinics. Gender Champions were given space at clinics to talk about gender equality. Youth Clubs delivered gender equality messages in community meetings, and directly to households through Theater for Development plays that they wrote themselves.

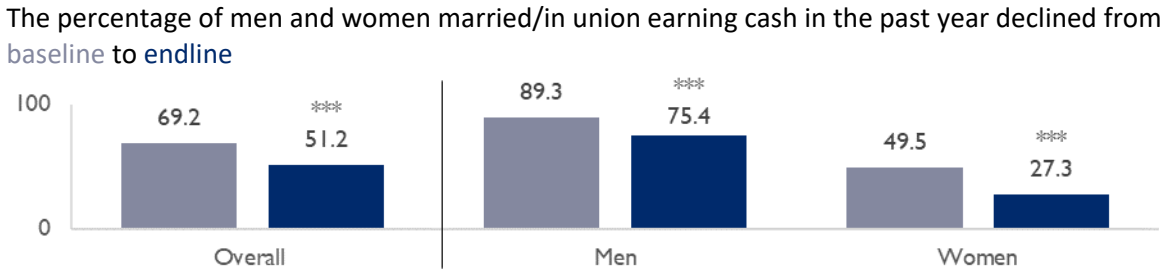
A female focus group in Chikwawa confirmed to the study team that the gender messages have changed men's behavior and men are helping women with household responsibilities; at the same time, men are becoming more flexible in allowing their spouses to participate in SILC groups and generate income for the family. The group sees some men becoming models and influencing others to change their lifestyle.

According to Gender Champions interviewed by the study team in Nsanje district, as a result of sensitization men are sharing women's workload now, and gender-based violence has declined. They noted that previously, there was more hunger in the family because women would give men more food to appease them, and men made all the decisions. Couples could not talk about sex, and men decided how many children the couple would have. A greater number of men share responsibilities for household chores, which has given women the time and freedom to participate in UBALE groups, and more couples are able to discuss and plan their families together. The Gender Champions said that these changes occurred gradually and estimated that now 80 to 90 percent of households in their GVH of 26 villages had changed their behavior.

Decision-making: The FFP indicators on self-earned cash and decision-making focus on access to cash. Measuring the extent to which men and women earn cash is important because women who earn more cash contribute to household finances, potentially increasing their household decision-making authority. Cash is thus one pathway to women's empowerment and gender equality. Because women are more likely to perform unpaid work or work for in-kind payment, this indicator may understate the extent of women's work in the project areas.

Endline survey results show that the percentage of men and women married or in union who earned cash in the past 12 months declined at endline (Figure 4). Both men and women earned less cash at endline compared to baseline, and the decrease was more pronounced for women. One explanation is the external shocks (dry spells, floods, variable rainfall) that affected the project area, damaging crops and raising the price of maize, a staple food.[12] However, the MVAC reported that while prices for most crops improved slightly, they were too low for farmers to record good gross margins (SADC, 2019).

Figure 4: Percentage of men and women married or in union who earned cash in the past 12 months



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Gender dialogues encouraged couples to share decision-making about their income, and financial training helped them to make good decisions about the use of their assets. The endline data indicate that men became decisively more inclusive with respect to decision-making about their self-earned cash, with fewer men making decisions alone and more men making joint decisions with their spouse/partner, and women retained (or may have actually slightly improved) their decision-making power over their own cash (Figure 5). This was confirmed in qualitative interviews where female FGDs

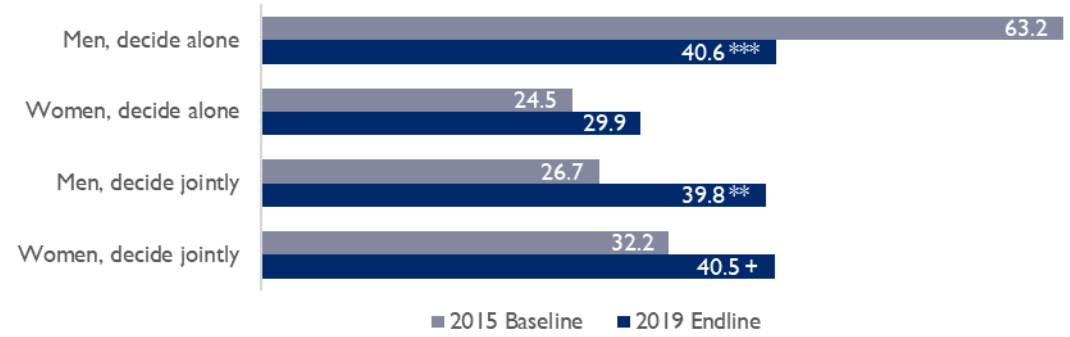
[12] At the time of the quantitative survey (July – August 2019), the Southern Region was considered IPC Phase 2, "stressed" (FEWS NET, 2019a).

told the study team that shared decision-making between couples has improved because of gender equality activities promoted by UBALE.

These gains are overall quite positive for women and men. The qualitative study team acknowledges that such social and behavioral change can be a slow process. One female SILC group said that men still often make loan decisions for women. The women mentioned a few strategies they use to protect their loan money: some women will sometimes take a smaller loan to ensure that their husband will not misuse the money, and if there is a strong disagreement about how to use the loan, some women will repay it in the first month so the husband does not use the money for another purpose.

Figure 5: Joint or solo decision making about self-earned cash by men or women in a union (%)

From baseline to endline, fewer of the men make decisions alone; prevalence of joint decision making increased among men and women



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

4.2.6 Conclusions

A major achievement of UBALE was strengthening and building the capacity of government and traditional structures to monitor and implement extension work in the three targeted districts. This allowed UBALE to implement project activities and reach farmers and individuals in all TAs in the target area.

The use of low-tech, low-cost technologies to increase sustainability and yield were appreciated by agriculture extension workers and allowed female, male and young farmers to increase their knowledge in farm management and business planning. These technologies helped farmers to have access to diverse crops and increase not only food availability but also income.

UBALE's agriculture extension strategy, which included working through the AEDOs to support lead farmers and mama and baby plots, was successful in transferring skills, suitable technologies, and new agriculture management techniques to farmers, enabling them to improve soil conservation and increase yield. This was despite constraints related to the timing of project approval, which reduced the number of years available within the LOA to implement agriculture extension activities.

The marketing group concept is understood by farmers but needs time to mature and become effective. Farmers are willing to keep working together to produce and sell to local buyers but need technical support and advice to identify buyers and products that generate a profit. At the same time there is a need for formal financial institutions in the target area that can support farmers to grow. UBALE's efforts to establish the BCN SACCO are commendable, but it will take time for this financial institution to achieve sustainability.

Gender messages supported changes in men's behavior to help women with household responsibilities. Gender dialogues encouraged couples to share decision-making about their income, and together with financial training, helped them to make better decisions about the use of their assets.

> ***Women find six food groups scary (intimidating), a far-fetched dream. It's hard for them to afford different foods. CCFLS helped to move the slow learners and those from most vulnerable households. They were able to understand, and this was something they could do at home. Women liked being supported through learning, and we saw it affect their older children.***
>
> - **UBALE staff**

4.3 Purpose 2: Improved Nutritional Status among PLW and CU2

To address good health and nutrition, UBALE followed the evidence-based approach of targeting the first 1,000 days of life, from conception through a child's second birthday. Activities in support of Purpose 2 focused on strengthening the capacities of government and community structures to provide services and support to households (Sub-purpose 2.1), strengthening households' capacities to apply optimal behaviors for feeding and care (Sub-purpose 2.2), and improving women's agency to empower them to make health-related decisions for themselves and their children (Sub-purpose 2.3).

4.3.1 Sub-purpose 2.1: GoM MCHN Systems Management Practices are Improved

During the first year of the project, the GoM Department of Nutrition, HIV and AIDS (DNHA) reviewed and updated the National Care Group Model system. It introduced and defined the required supporting structures to build community ownership and focus efforts to reduce stunting in line with GoM Scaling Up Nutrition mandates. Correspondingly, UBALE shifted the management-strengthening component to support the government expansion of the Care Group model in the three project districts and strengthen supporting structures at district, TA, GVH and community levels.

District and TA Health Systems Improved Supervision, Coordination, and Reporting Practices

> ***UBALE made the various government structures and systems become functional and transparent.***
>
> - **District Government Staff**

Aligned with efforts to strengthen decentralized structures across project Purposes, UBALE supported the government's MCHN/WASH structures at district and TA levels to strengthen their management systems to ensure quality implementation of activities, full integration with local systems, and optimal chances of sustainability. Support included governance training, participatory planning and monitoring, training in resource mobilization, and ongoing accompaniment and mentorship. These efforts resulted in the establishment of committees and the development of 23 management plans across the three districts—District Nutrition Coordination Committees (DNCCs) and District Coordination Teams (DCTs) for WASH in each of three districts, and 17 TA-level Area Nutrition Coordinating Committees (ANCCs), activities important for sustainability and quality implementation of the GoM Care Groups (CRS Malawi, 2017a). UBALE partnered with the above institutions, these committees and their members on joint supervision and planning visits to the field; manual, module, and curriculum development; and activity prioritization to ensure both UBALE and the GoM would achieve their objectives (CRS Malawi, 2017a). By the end of the project, each committee had annual

management improvement plans in place, implemented and monitored, exceeding project targets (Indicators 2.2 and 2.3, respectively) (CRS Malawi, 2019).

Interviews with district staff found that UBALE was credited with having revamped the DCTs and DNCCs. Project support for quarterly and semi-annual meetings, field visits and joint monitoring activities was much appreciated and considered a vital contribution. This support was highly valued in Chikwawa and Blantyre Rural districts, where key informants stated that project support had increased visibility and advocacy for more accountability for child health and nutrition and WASH efforts at the district level. This was an important platform for multi-sector coordination, involving staff from ministries of health, agriculture, education, and gender; 487 government staff were trained across the districts through DNCCs and ANCCs (CRS Malawi, 2018a). Project financial support enabled regular district-level quarterly and annual coordination and planning meetings, a practice which has continued. In Nsanje District, DNHA officials appreciated the project's initial partner mapping, and its assistance in forming and training the ANCCs, Care Groups and Village Nutrition Coordinating Committee (VNCCs), but lamented that UBALE did not conduct project-specific sharing and feedback meetings for the district as done by other NGOs. They felt that UBALE monitoring was not integrated and timely, and as a result felt unaware of the project's progress and achievements. The relationship improved in the last year of the project, after the partner management was changed. The partner reported that there was good collaboration with district coordinators and that the management of activities was fully integrated and functioned through government committees. This integration may have lowered the visibility of UBALE's contribution and may be a reason that UBALE's role within the government structure was not recognized.

Community Structures Formed

Through the ANCC and VNCC structures, UBALE IPs engaged with 276 HSAs and over 3,700 government frontline workers to roll out and oversee the Care Groups and related structures according to the new national guidelines (CRS Malawi, 2019). In KIIs, district and health authorities were highly appreciative of project support to area- and village-level committees, especially the Care Groups and WPCs.

Community Leaders for Action on Nutrition (CLAN) groups were also important for project implementation. The GoM Scaling Up Nutrition movement Care Group model relies on CLAN groups – multi-disciplinary community structures—to spearhead cross-cutting community ownership of efforts to reduce stunting and promote dialogue on gender, health, MCHN and WASH. Area- and village-level CLAN groups are comprised of 20-25 local leaders such as the Group Village Headman, Village Headman, religious leaders, and other prominent community members (CRS Malawi, 2014).

To support community ownership and oversight of activities, 26 ACLANs and 149 CLAN groups were established and registered by the end of FY16 (CRS Malawi, 2016a). According to project reports, these groups became increasingly active during the last two-and-a-half years of the project, including participating in meetings, helping promoters and volunteers solve problems, organizing events, mobilizing resources, enforcing latrine-building compliance and environmental activities, and helping ensure CGVs remain active (UBALE quarterly reports). The qualitative study team, however, found little specific mention of CLAN groups during community visits, although volunteers and promotors did talk about village leaders' involvement in organizing people for activities, enforcing household compliance

with latrines and sanitation requirements, organizing food contributions for CCFL sessions, and intervening when issues arose related to the rations.

The study team did not get the impression that CLANs were overseeing the health promoters and Care Groups as the model envisions. Multiple KIIs (health authorities, UBALE staff, District Nutritionists) concurred that the work with CLANs is an important component for sustaining community-level activities, but that the process of transferring management to CLANs was incomplete during UBALE, due to insufficient time to mature and learn to function independent of UBALE. It is worth noting that Care Groups were initiated during the second year of the project (FY16) because revised national guidelines were not finalized until October 2015. Also, field support activities only continued for six months during UBALE's final year, as field activities closed down early due to budget and staff constraints. This means that once groups were formed, the project had only about two-and-a-half years of community-level activities for Care Groups and related structures.

The qualitative study team found community-level groups well established. By the end of the project, UBALE had formed 732 Care Groups, surpassing its target of 663 Care Groups (CRS Malawi, 2018a [IPTT data]), and had trained a full cadre of Care Group volunteers.[13]

A total of 630 WPCs were reported to have been trained by the project, with the bulk of these (432) in Blantyre District (CRS Malawi, 2018a [IPTT data]). Through these, UBALE and the government trained 3,915 members of the GVH Water Committees over the LOA (61 percent achievement) (Indicator 2.6a) (CRS Malawi, 2018a [IPTT data]). During the FGDs, WPCs mentioned that they received Community-Based Management trainings from various partners, including UBALE, which were a valuable source of information and inspiration to improve water management systems. A notable feature of the committees was the active participation of women, both in numbers and responsibilities. FGDs indicated that Care Group and WPC members were very knowledgeable of their roles, responsibilities, and activities in the community.[14]

Key Activities

Several initiatives and activities were implemented to achieve Purpose 2 objectives. These included training of PLW on recommended dietary practices, child feeding and care practices, and diversified diets from locally available foods; addressing growth faltering with Community-led Complementary Feeding and Learning Sessions (CCFLS); distribution of food rations to PLW and CU2; and increasing attendance for key MCHN services. According project reports, parents of over 232,149 CU2 beneficiaries were reached with key messages and more than 106,000 PLW received supplementary rations —project achievements that met or surpassed targets (CRS Malawi, 2019 [IPTT]).

Care Groups: UBALE organized 732 care groups with 8,454 member volunteers (CRS Malawi, 2018a [IPTT]) and achieved wide-scale coverage across the three districts. Over the LOA, UBALE Care Groups rolled out the four DNHA standard modules on hygiene and sanitation, maternal health and nutrition, breastfeeding, and complementary feeding, plus UBALE-designed modules on BabyWASH, health decision-making and Community-based Integrated Management of Childhood Illness (C-IMCI).

[13] More detail is provided in the next section on Care Groups and community activities.
[14] More discussion of these groups is included under Purpose 2.2.

Additionally, through nutrition fairs, cooking demonstrations and home visits, Care Groups promoted the use of locally available foods and fuel-efficient stoves to reduce the burden on the environment of firewood for cooking (CRS Malawi, 2019). Project facilitators who were trained in nutrition and childcare, trained project-recruited health promoters, who in turn trained and worked with Care Group volunteers (CGVs). After receiving the nutritional and childcare messages, CGVs disseminated the information to a group of their neighbors. This delivery structure sought to maximize the reach of the essential messages and practices promoted by the project. Health promoters (who were paid a modest stipend) and CGVs were also trained in counseling skills and problem-solving approaches to equip them to counsel peers and address relevant issues during household visits. CGVs were trained from FY17 to FY19, with the C-IMCI module introduced only in the final year of the project. Care Groups reached an estimated 92 percent of eligible children (CU2) by Year 4 (CRS Malawi, 2018a [IPTT]). A survey conducted in project communities in 2018 confirmed that parents of CU2 were receiving regular home visits; 48 percent of those surveyed had been visited by CGVs within the last two weeks and 72 percent within the last month (Masters and Schneider 2018).

Community Complementary Feeding and Learning Sessions: The CCFLS approach was a successful WALA project innovation, scaled up to a twice-yearly activity in UBALE project communities. Under UBALE, CCFLS shifted from the recuperative Positive Deviance/Hearth model to a more preventative approach, with community activities with active learning. The age group also changed from CU5 to CU2. Through the LOA 1,396 CCFL sessions were conducted, starting with 800 sessions held in Year 3, and fewer sessions in the fourth and fifth years because fewer children were faltering and needed the intervention (CRS Malawi. 2019a). This trend was reported across all districts, which provided early evidence that the collaborative efforts from various interventions within Purpose 2 were producing the intended result of improved nutritional status. The CCFLS activity also provided early evidence of improving nutritional status of children across the project area.

Nutrition fairs: Based on the success of the WALA and IMPACT projects' Child Health Days, twice-yearly nutrition fairs were organized to promote health and nutrition activities, promote social change, and showcase complementary project activities that enable caregivers to address food security. Nutrition fairs were also used to highlight innovations and provide sustainable links between households and service providers or vendors. This activity started in Year 3 of the project, was popular and successful, and exceeded the Year 4 target number of fairs per year.

Other activities overlapped with Purpose 1, such as establishing or supporting Care Group and home gardens for producing vegetables and OFSP to supply households with micronutrients. In addition to the practical CCFLS activities, the project conducted cooking demonstrations using different recipes to equip mothers and caregivers with knowledge and skills to prepare diversified and nutritious meals.

Mother and Child Rations: The supplementary ration distribution during the hunger season targeted all PLW and CU2 in the project communities. Attendance at ANC visits, child growth monitoring, and registration with Care Groups were required for enrollment.

Grandmother Groups: UBALE introduced Grandmother Groups to reinforce counseling messages, generate family support for changed practices, address cultural barriers, and promote social change. By the end of Year 4, 82 Grandmother Groups were formed, and 128 community events were held, exceeding targets for both indicators (CRS Malawi, 2018a [IPTT data]). The qualitative study team found

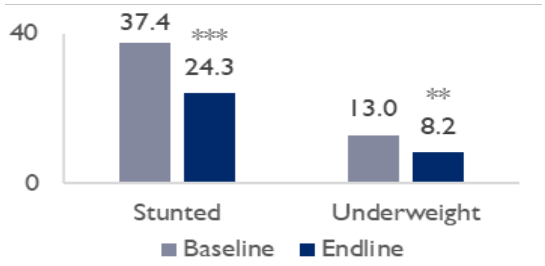
Grandmother Groups in two project communities visited; health promoters and CGVs from those communities and UBALE staff and District Nutritionists all stated in KIIs that Grandmother Groups were an important component for addressing cultural barriers to targeted MCHN practices and to changing social norms. Health promoters and CGVs in communities that lacked Grandmother Groups were aware of the activities in other communities, and along with UBALE staff and District Nutritionists, stated that in future projects, Grandmother Groups should be introduced in all communities from the start.

Gender Champions: In the latter half of FY17, Gender Champions and Gender and Sustainability Field Officers held over 1,000 dialogue sessions with Care Groups to discuss progress toward gender equality (e.g., changes in gendered division of labor, access to and control over resources) (CRS Malawi, 2017a).

4.3.2 Sub-purpose 2.2: Targeted Households Adopt Evidence-Based Behaviors That Reduce the Prevalence of Malnutrition

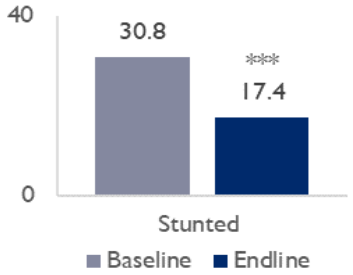
UBALE supported frontline staff and communities to ensure that targeted households adopt evidence-based behaviors promoted through the Care Group platform, community groups (e.g., CLAN groups), and linkages with other project elements. This section describes the results of relevant standard outcome indicators under this sub-purpose.

Figure 6: Prevalence of stunted or underweight CU5 (total) at baseline and endline



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Figure 7: Prevalence of stunted CU2 at baseline and endline



+ p<0.1,* p<0.05, ** p<0.01, *** p<0.001

Nutritional Status Among Children

The endline survey found the nutritional status of CU5 had improved significantly since baseline. The proportion of CU5 who are classified as underweight and stunted decreased significantly (Figure 6), with

no change in wasting rates. The percent of underweight children dropped 4.7 percentage points to 8.2 percent ($p<0.01$), surpassing the project target of 9 percent. The percent of children with moderate or severe stunting (chronic malnutrition) decreased from 37.4 percent to 24.3 percent ($p<.001$), a substantial reduction of 13.1 percentage points and surpassing the project target of 31 percent. Over the LOA, this equates to an average 3.3-percentage-point annual reduction in the rate of stunting among CU5. Assuming this trend would continue through the LOA, this change is greater than the national trend noted in the latest DHS survey, of 2.0 percentage points per year.[15]

Because the project aimed to improve the nutritional status of women and children for the first 1,000 days, stunting among CU2 was also examined. Baseline-endline comparisons show a significant reduction in stunting in this age group, from 30.8 percent to 17.4 percent, a decrease of 13.4 percentage points ($p<0.001$) (Figure 7). Additional analysis shows that stunting in the 24-59-month age group decreased from 41.8 percent to 29.0 percent ($p<0.001$).[16]

> ***Stunting went down because of UBALE's integrated interventions; and a whole range of activities with so many parts that worked well together to support the mother and child. All needs were addressed.***
>
> - **IP staff**

While it is difficult to decisively attribute these improvements to UBALE activities, there is qualitative evidence to suggest that UBALE had a positive impact on nutrition status. District nutrition staff spoke of the high coverage of UBALE Care Group activities and the project's multi-sectoral community-level activities in their districts and felt the project had made a major contribution to the observed reduction in stunting. They noted that the number of severe cases of malnutrition being admitted to hospitals had decreased dramatically. Respondents shared their own observations that because of UBALE, child feeding practices, understanding of caregivers, and access to nutritious food and hygiene practices had all improved; they felt the decrease in diarrheal disease was linked to improvements in WASH. Moreover, they noted that CCFLS and screening activities had enabled early detection and referral of children with faltering growth, and an increase in the use of government maternal and child health services. Similarly, at the community level, FGD participants perceived that malnutrition cases had been reduced; children were healthier, stronger, and less prone to diarrhea.

Women's Nutritional Status

There was no statistically significant change in women's nutritional status and the project target of 6 percent was not reached. At both baseline and endline, about seven percent of women were classified as underweight (BMI < 18.5) (Annex F).17 This is consistent with the national prevalence rate in the most recent DHS (GoM and ICF, 2017).

[15] The national prevalence of stunting in CU5 decreased from 47 percent in 2010 to 37 percent in 2015-16 (GoM and ICF, 2017, p.161). This 10-percent reduction over five years amounts to 2 percent per year, on average.

[16] The data on the 24-59-month age group are not shown in tables/figures in this report; they are from additional analysis by TANGO.

[17] Body Mass Index (BMI)—the ratio of weight in kilograms to the square of height in meters (kg/m^2)—was used to evaluate women's nutritional status. A BMI below 18.5 indicates underweight or acute malnutrition and is associated with increased mortality, food insecurity, and adverse birth outcomes in future pregnancies. This indicator frames the extent to which women's diets meet their caloric requirements. Improved nutritional status among women is expected to increase women's work productivity, which may improve agricultural production.

When FGD participants were asked about UBALE's impact on women's health and nutritional status, participants spoke mainly of efforts to increase women's dietary diversity and the use of health services during pregnancy and delivery to ensure best outcomes for mothers and children. Although project documents (USAID, 2017; USAID, 2014; CRS Malawi, 2014) and District Nutritionists all noted that teenage mothers were most at risk of being underweight and their children malnourished, targeting specific to this vulnerable group was lacking.

Use of Maternal and Child Health Services

The prevalence of women making at least four ANC visits[18] increased 5.5 percentage points to 48.3 percent at endline ($p<0.01$), slightly below the project target of 50 percent (Annex F). Annual project surveys in 2018 and 2019 found similar results reporting that the percent of women who registered and received any ANC visits is very high (above 95 percent), but that four or more ANC visits remains a challenge[19] because many women do not attend during the first trimester due to limitations at rural clinics to confirm pregnancies at this stage.

The contraceptive prevalence rate (including natural modern and traditional methods)[20] is a proxy measure of women's access to reproductive health services. Though not a project indicator, the endline survey did find an increase in the contraceptive prevalence rate from 75.6 percent to 83.0 percent ($p<.01$).

Numerous KIIs with health authorities credited UBALE Care Groups and CGVs with contributing to a large increase in the number of women attending ANC clinics and registering for ANC earlier in their pregnancies. They consider the establishment of this vital link for women in the community to the health system, continuing through birth and the first two years of the child's life, to be one of the project's most important positive impacts.

Community volunteers (i.e., CGVs and health promoters) also claimed that increased ANC coverage was a key project impact. They credited training in the Maternal Health and Nutrition module with giving them the knowledge and skills to motivate pregnant women to partake in ANC services, and stated that more men were attending the first ANC visit with their wives, getting tested for HIV, and hearing key messages about pregnancy directly from health staff, increasing their understanding and support of prenatal nutrition needs. The requirement of pregnant women to show a record of ANC visits before enrolling for food distributions also helped to increase initial ANC enrollment but respondents did not feel this was the sole reason. In areas with Grandmother Groups, grandmothers were influential, convincing families to overcome barriers and ensure young mothers go for services.

[18] The ANC indicator measures the percentage of women of reproductive age who had a live birth in the last five years who received ANC with a skilled health professional (doctor, nurse, midwife, skilled birth attendant or clinical officer) four or more times during their most recent pregnancy, as recommended by WHO guidelines. This indicator does not measure the quality of the ANC visit.

[19] The FY18 Annual survey found 51 percent of women had four ANC visits and the FY19 survey found 48 percent (CRS Malawi 2018a).

[20] This USAID indicator, "contraceptive prevalence rate women 15-49 years of age who are married or in a union," is the percentage of women of reproductive age or her partner who is currently using at least one contraceptive method, regardless of the method used, which includes "natural modern" and "traditional" methods. This indicator is a proxy measure of access to reproductive health services and is useful for tracking progress toward achieving targets for access to reproductive health and the quality of family planning services.

In one district, DHO officials expressed concern that these gains might not be sustainable. They had recently observed a decline in ANC attendance and worried that this may be related to the end of the UBALE project and decreased community-level activities. Yet the study team found many CGVs and health promoters still active in their communities, and now involved with safe motherhood initiatives being implemented by Save the Children in Chikwawa and Rural Blantyre.

Growth Monitoring for Children

Project annual surveys show a high level of participation of CU2 in growth monitoring in project communities, a DNHA activity conducted jointly by health promoters and HSAs. The FY19 annual survey found that during LOA, 63.8 percent of children attended growth monitoring in the previous month, exceeding project targets (Indicator 53) (CRS Malawi, 2019). The Annual Survey FY18 presented results by district and noted that participation was lower in Blantyre where UBALE worked directly with Care Groups in only half the TAs (59 percent attended in the last month), whereas in the other two districts, 70 percent of CU2 had attended in the last month (CRS Malawi, 2018a). The survey also noted that growth monitoring attendance was higher among children under one year of age, compared to those 12-23 months, explaining the lower attendance, because immunization regimens are completed in the child's first year. (CRS Malawi, 2019 and 2018a).

FGDs indicated that CGVS, health promoters and HSAs credited the project with motivating mothers to take children to under-five clinics regularly and that attendance continues, noting more involvement with fathers taking children for check-ups.

Child Health Days and Nutritional Screening

As part of the partnership with DNHA, the project provided support for district activities related to National Child Health Days. KIIs with DNHA officials in two districts noted that this had contributed to high coverage of these activities. District Nutritionists in Chikwawa noted how logistical support from UBALE had helped to bridge gaps in resources, and the participation of Care Groups, health promoters and community structures had been invaluable for mobilizing community participation. For future campaigns they noted that the Care Groups, health promoters, and community structures were still in place, and that HSAs would continue to work with these groups. During KIIs, some HSAs expressed eagerness to find more ways for health promoters to assist them with their community outreach work.

The CCFLS activities also boosted nutritional screening efforts in project communities, since children are screened to identify those with growth faltering. District Nutritionists and HSAs were highly appreciative of the screening activities and how these helped to identify malnutrition cases early and channel them into GoM therapeutic feeding projects. District Nutritionists in two areas stressed how this activity had helped identify cases for early intervention, which they felt had helped to prevent cases and drastically reduce the number of severe malnutrition cases. During the final year of the project, UBALE partnered with UNICEF to support a nutritional screening response to the cyclone and flood crises.

Changes in Infant and Young Child Feeding Practices

Exclusive breastfeeding: In KIIs and FGDs, health authorities and project participants reported an increase in women who were exclusively breastfeeding as a result of the Care Group breastfeeding module and skills members learned. Numerous KIIs cited breastfeeding as a main contributor to improving the nutritional status of children and a reduced prevalence of diarrhea. It is difficult to square

the qualitative findings with those of the endline survey, because the sample size (n=79) was too small to indicate statistically significant change in breastfeeding prevalence in children under six months.[21]

During FGDs, UBALE participants gave detailed examples of breastfeeding practices that had changed, suggesting progress in translating knowledge into practice: mothers were breastfeeding on demand and more frequently, and were encouraged that babies were calmer and more satisfied. CGVs and health promoters said that mothers were no longer introducing food too early, which had been a major barrier to exclusive breastfeeding. In a few locations, health promoters and CGVs reported that women are now more likely to take their infant with them to work instead of leaving them in someone else's care, which helped with exclusive breastfeeding. Some women reported being excited that men had learned about and were more supportive of their wives breastfeeding.

Minimum acceptable diet: The minimal acceptable diet (MAD) indicator embeds multiple components of infant and young child feeding (IYCF) practices, including breastfeeding status, whether the child is fed with minimum meal frequency (MMF) per age, and whether the child is fed the minimum dietary diversity. According to the endline survey, the percentage of children 6-23 months of age receiving MAD decreased more than 10 percentage points to just over 5 percent (Figure 8). Continued breastfeeding rates remained high, with 93 percent of mothers of children 6-23 months still breastfeeding, the same level as in the baseline.[22] The survey data suggest that both MMF and MDD decreased substantially, but quantifiable results and statistical significance are not available for these indicators.

The UBALE baseline report had noted that child feeding indicators are highly sensitive to household access to food, thus the endline survey results may well reflect the dire food insecurity at the time of the survey instead of representing the child feeding practices of the population at the end of the project. For example, the results of a 30-cluster survey of 266 households served by Care Groups in the project area in 2018 (Masters and Schneider 2018) suggested that child feeding practices were improving, which is a very different result from the PBS endline. The Masters and Schneider survey found 34.6 percent of children 6-23 months were fed the Minimum Acceptable Diet[23] (whereas in the PBS, this result was 5.2 percent).

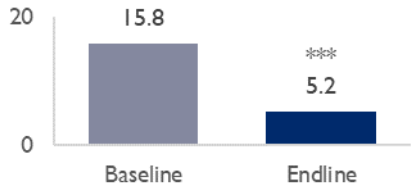
The evaluation team notes that programs that seek to change IYCF practices and target children 0-23 months often base outcome information on a sample size that, for cost reasons, is powered to measure stunting in CU5. The subsample of 0-23-month old children will of course be much smaller, so the statistical precision for CU2 indicators is correspondingly lower. Ideally, it would be a good practice for all programs focused on improving IYCF and with an integrated agriculture component focused on improving dietary diversity to appropriately power the sample to measure and present MMF, MDD, and changes in key food groups as well as MAD. This would yield sufficient information at baseline to inform a program strategy and approach, and good data for explaining results at endline. However, this approach would require a much larger sample size – at least double that used for CU5 –which would double the cost of the field work for a survey. Given limited budgets, if a larger sample size to capture

[21] The survey results for prevalence of exclusive breastfeeding were 70.8 percent at baseline and 76.4 percent at endline (Annex F).
[22] These data are not shown in tables/figures in this report; they are from additional analysis by TANGO.
[23] The Masters and Schneider 2018 study found 62 percent of children were fed the MMF and 52 percent the MDD.

changes in CU2 is not feasible, these important indicators should be tracked in the project's internal monitoring systems.

Figure 8: Percentage of CU2 receiving a minimal acceptable diet

The percentage of CU2 receiving a MAD decreased from baseline to endline.



+ p<0.1,* p<0.05, ** p<0.01, *** p<0.001

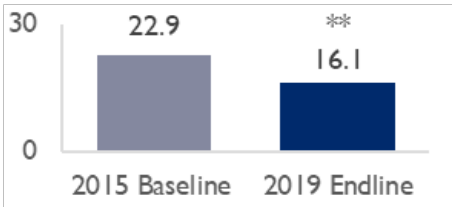
Findings from qualitative study of the UBALE final evaluation show that project staff, health authorities, and community volunteers all felt that UBALE project activities have improved child feeding practices, in particular that mothers have improved the diversity of foods fed to children. Major contributions of UBALE noted were that parents learned and adopted practices such as adding nutrient-rich foods to the child's porridge, and project activities increased both knowledge of and access to nutrient-rich foods. Across the project area, CGVs talked about recipes they had learned, and how mothers had developed skills and confidence and now use more types of foods from the six food groups.

The qualitative study found the CCFLS approach was an effective approach to reinforce feeding practices and improve dietary diversity. CCFLS was highly popular in the communities and much appreciated by beneficiaries, who claim they had learned new ways to use local foods to add nutrition to their child's staple food. Community volunteers liked the "hands-on" learning, and that mothers became convinced it was possible to feed their child according to IYCF guidelines using food that was readily available. Community volunteers said mothers liked the active learning and trying new recipes and felt encouraged when they saw their child motivated by other children to try foods when the children ate together. Mothers could see their child gain weight over a two-week period, which further convinced them that the recommended feeding practices were doable and would yield results. Several CGVs spoke of their own experience, and the experience of other mothers, with CCFLS, and said that after attending CCFLS with one child, they were able to apply the learning with their second child who grew well and didn't need any intervention.

Year-round Access to Nutritious Food for PLW and CU2 Increased

An important component of improving the nutritional status of women and children was to increase their year-round access to nutritious food. UBALE aimed to improve overall dietary diversity for women and children and increase consumption of specific nutrient-rich foods. According to KIIs, DiNER fairs and food preservation teaching events, as well as the project emphasis on locally available foods, helped households maintain dietary diversity and food security during the lean season.

Figure 9: MDD-W at baseline and endline



+ p<0.1,* p<0.05, ** p<0.01, *** p<0.001

Women's dietary diversity. Improvements in women's dietary diversity are considered to contribute to improved pregnancy and child health and nutrition outcomes.[24] Minimum Dietary Diversity in Women (MDD-W) is the proportion of women of reproductive age who consume at least five of ten specific food groups in the previous 24 hours.[25] Baseline-endline comparisons show that MDD-W in the project area worsened, decreasing from 23 to 16 percent (p<0.01) (Figure 9). This is considerably lower than the 2018 Tufts University study, which found that 31 percent of women were meeting the MDD-W (Masters and Schneider 2018).

Another indicator, Women's Dietary Diversity Score (WDDS), is a validated proxy measure of the micronutrient adequacy of a woman's diet computed based on nine critical food groups. It represents the mean number of food groups consumed by the sample.[26] Endline results indicate that across the sample, the WDDS also decreased, from 3.3 to 3.2 of nine basic food groups, a minor but statistically significant decline from baseline (Annex F).

While the MDD-W and WDDS indicators suggest otherwise, as described previously, the data from FGDs and KIIs support the findings in the Tufts survey and suggest positive outcomes with respect to women's dietary diversity. Care Group Volunteers, Health Promoters and HSAs talked about how families pay more attention to diets of pregnant women in particular, and made the effort to ensure fruits, vegetables and protein sources are provided. Care Group Volunteers and mothers spoke in detail and enthusiastically about new recipes they have learned and now use based on foods readily available through farming or in local markets, particularly beans, peas, and OFSP.

Targeted nutrient-rich value chain commodities. As described above, FGDs and KIIs stated that DiNER fairs, cooking demonstrations and food preservation teaching events integrated agriculture and nutrition components and taught people how to use and preserve locally available foods, including OFSP, which helped to promote crop and dietary diversity. Although the project area experienced challenges in household food security, the endline survey results show that the percentage of women of reproductive age consuming targeted nutrient-rich value chain commodities increased from 16.2 percent to 27.1 percent by endline (p<0.001) (Annex F). Intake of nutrient-rich value chain commodities also increased among CU2, from 8.7 percent to 16.2 percent (p<0.05). The prevalence of women who consume OFSP increased from 14.1 percent to 24.5 percent (p<0.001). This is impressive considering

[24] Women of reproductive age are at risk of multiple micronutrient deficiencies, which can jeopardize their health and ability to care for their children and to participate in income-generating activities.
[25] MDD-W food groups include (1) grains, roots, and tubers, (2) legumes and beans; (3) flesh foods, including organ meat and miscellaneous small animal protein, (4) nuts and seeds, (5) dairy products, (6) eggs, (7) other vitamin A-rich vegetables and fruits, (8) other fruits, (9) other vegetables, and (10) vitamin A-rich dark green leafy vegetables.
[26] Two main characteristics differentiate the two indicators MDD-W and WDDS. First, MDD-W is a proportion, whereas WDDS is a quasi-continuous score. Second, slightly different food groups are used to calculate each indicator.

that according to figures in the UBALE intervention overlap analysis, Purpose 1 activities were implemented in 28 percent of Purpose 2 households (CRS 2019a).

Home gardening efforts met with mixed results. FGDs indicated that in most communities, limited access to water for gardens was a common barrier and in two districts, long periods of drought made gardening prohibitive in the dry season. Community volunteers in areas with intensive agricultural activities from UBALE spoke of support received from lead farmers and their success with household or group gardens—the skills and conservation techniques they had learned, how food gardens had benefited many in the community, and efforts for sharing or selling seeds, with some indicating their plans to continue gardening once the dry season ended. In one location, health promoters and HSAs noted that they no longer had the gardens but stressed that this is an important activity that they felt should have continued. In the remaining communities, gardening efforts had been less effective, and people listed many challenges including lack of seeds, termites, some attempts and failures, and a need for technical support. In most communities visited, distribution of OFSP was well appreciated and the few communities that had not received OFSP seedlings were interested to be included in the future.

Supplementary ration during the lean season. The provision of the monthly food ration to PLW and children was designed with a dual purpose: to fill nutrition gaps for women and children during the lean season when households were most vulnerable to food insecurity, and to incentivize participation in community health and nutrition activities. The intervention is well designed in the context of a DFAP, using blanket supplementation to encourage participation and to reach all targeted CU2. Limiting distribution to the lean season was appropriate and helped mitigate the risk of dependency on the ration, which would undermine efforts to promote locally grown food. Food distributions allowed time for agricultural activities to begin and increased food availability. UBALE exceeded the targeted number of pregnant women receiving rations (157 percent of target) and met targets for mother-child pairs (children age 0-5 months, 6-23 months) (CRS Malawi, 2018a [IPTT]).

Initially, the ration acted as an incentive to enroll target mothers in project activities and encourage participation of CGVs in learning and sharing activities. However, once groups were established and active, UBALE was able to continue this momentum with the project's numerous community activities. In communities visited by the study team, where UBALE supported Care Group activities, beneficiaries and CGVs demonstrated good understanding of the ration targeting, linking this group to the first 1,000 days and the importance of good nutrition in this period for child growth and development.

Distribution of Corn Soy Blend (CSB) also reinforced complementary feeding messages, and the oil and split peas were easily integrated into the diets of both women and children. Initially, cooking demonstrations and CCFL sessions focused on CSB-based recipes, but this was quickly phased over to focus on foods readily available in the community. These activities developed an appreciation and confidence that local protein-rich foods are doable. This qualitative finding is supported by the endline survey result that consumption of these foods did not decrease as much as the other types of food. Families became used to adding these foods to the child's diet, and once agricultural activities increased the availability of beans and pigeon peas in communities, families were able to continue feeding these foods to their children. While FGD participants spoke of an unexpected glut of pigeon peas and a resulting price drop, this had the positive effect of encouraging families to give these foods to children. In KIIs, health promoters stated that CSB was helpful to teach families about complementary feeding

and reinforce the importance of a mixture of foods, and expressed appreciation that the project had emphasized locally-available foods

In FGDs and KIIs, beneficiaries and community volunteers expressed appreciation for lean-season rations. Community volunteers and health authorities stated that the ration was necessary given the climate shocks and food security risks during the project period. District Nutritionists in two areas stated that the lean-season rations helped maintain nutritional status and gains from MCHN activities.

The main challenges with rations centered on incomplete beneficiary listings or missing names of eligible people. Health promoters said that sometimes beneficiaries were unaware that they no longer met targeting criteria, but other times, when the exclusion from the list was an error, UBALE staff did not offer any solution or explanation. Partner agency KIIs expressed some frustration with a data system where they could input beneficiary lists but that was subject to errors. In Nsanje, the qualitative study team heard a few complaints of long distances to some food distributions and irregular communication about distribution times and locations. Nevertheless, overall, beneficiaries and partners stated that they were satisfied with this component.

Diarrhea and Oral Rehydration Therapy (ORT). The percent of CU5 who had diarrhea in the two weeks prior to the survey increased slightly by endline (from 19.0 to 24.1 percent, $p < 0.1$) (Annex F). It is clear that the project did not achieve the target (13.0 percent). However, findings from the qualitative study contradict this survey result, as respondents in almost all communities and district health and nutrition authorities reported a large decrease in diarrheal cases over the course of the project and the near-eradication of cholera as a result of UBALE and efforts in WASH. District health authorities and community members attributed this change to a large-scale increase in coverage of household latrines and constant reinforcement of messages throughout the project. The study team agreed that there was a large effort from communities on latrine construction of latrines that increased the perception that diarrhea prevalence had decreased. The majority of respondents in communities and health authorities felt that the reduction in diarrhea cases was a major contributor to the decrease in child malnutrition cases.

Dehydration as a result of severe diarrhea is a major cause of illness and death among young children but is treatable with ORT. Use of ORT to treat CU5 with diarrhea did not change from baseline to endline (Annex F). The qualitative study did not find any evidence of project emphasis on care for children with diarrhea or learning related to ORT even though feeding and care for sick children are topics in the child feeding curriculum. It is worth noting that the GoM Care Group training module on care of sick children (i.e., C-IMCI) was finalized late in the project, with training done in the final year and not completed in all areas.

Water, Sanitation, and Hygiene Practices

Accessibility to improved drinking water source. The percentage of households using an improved drinking water source did not change significantly from baseline to endline, remaining around 63 percent (Annex F). However, the percentage of households that had access to drinking water in less than 30 minutes round trip, as recommended by the GoM, increased 10 percentage points to 58.0 percent at endline ($p<0.05$) (Annex F).

The project did not construct new water points; it invested in building the capacity of WPCs. The design assumption was that if the numerous existing non-functional boreholes were repaired and maintained,

they would more regularly provide clean water, resulting in more use by households. Community-level FGDs and KIIs found that water was accessible year-round. The respondents did point out, however, that there are some boreholes which, as while they have remained functional, serve many people, resulting in long wait times. Female FGD respondents said that such boreholes serve up to 300 households, and they sometimes had to wake up as early as 4:00 a.m. to draw water. Other challenges, raised by government officials, were brackish water, maintaining and repairing boreholes and finding spare parts in difficult-to-reach areas, and the project design focus on capacity building without constructing new water infrastructure.

According to district water officials, having a WPC in place at the time of drilling a borehole is mandatory and UBALE's role was to strengthen existing committees. In terms of the effectiveness of capacity building, all sampled WPCs showed sufficient knowledge of their roles and responsibilities to manage water points: committee members interviewed by the qualitative study team were able to describe their role precisely as district water officials had done, i.e., to keep the water point areas clean and to raise resources for repairs and maintenance. On the issue of user fee contributions, the study team found that there were two main approaches. In the first, regular contributions of MWK 100, MWK 200, and MWK 300 per family were sought at monthly, bimonthly, and quarterly intervals, respectively. The major challenge with this system was that raising resources for water points that were not currently faulty or in an obvious state of disrepair was not easy. In the second approach, collections/contributions for the actual cost of the repairs were sought at the time of a breakdown, with the actual cost equally shared among families. WPC members told the study team that generally, raising resources in this way was easier but carried the risk of people going without water while funds were being raised. To address this, some WPCs used their knowledge of boreholes to detect faults early and anticipate a breakdown, raising resources immediately after sharing this information with users. Some WPCs in Nsanje established credit agreements with borehole parts dealers and were thus able to quickly access needed parts, then use the invoice to raise the money among users and pay back the credit. Nevertheless, contributions were not always easily collected via either approach as some people were reluctant to pay. Fortunately, all those who caused problems in paying, once referred to the Village Heads or Group Village Heads (GVH), paid their contributions.

Regarding borehole care, the study team observed that more care was given to the apron and less to the drainage system. This situation was slightly better in Blantyre than in Chikwawa and Nsanje, where more attention was paid to drainage systems, perhaps because they understood their added value: in these districts, during FGD participants claimed that water left to flow away from the borehole via a drainage system had alternative uses, namely as cooling spots for animals on hot days.

The study team found adequate availability of shops with borehole spare parts. Most communities had such shops within easy reach. The project also supported training for area mechanics specifically to help WPCs with more difficult repairs. Government officials from Blantyre and Nsanje districts reported up to a 70-80 percent drop in reported cases of boreholes that could not be repaired by the WPCs themselves, in itself a remarkable achievement.

Promoting recommended household water treatment technologies. UBALE promoted four technologies for water treatment: filtering, bleaching, boiling and solar disinfection. At endline, adoption of three out of the four technologies (all but solar disinfection) improved significantly, with 28.7 percent of UBALE

households practicing correct use of recommended household water treatment technologies, an increase of 20.7 percentage points over the baseline ($p<0.001$) (Annex F). The biggest gains were in bleaching, which increased from 4.1 at baseline to 25.1 percent at endline ($p<0.001$) (Annex F).

FGDs, especially those with women, similarly indicated that families prefer to bleach water (i.e., add chlorine or a commercial product, "WaterGuard"), which is easy and effective. Most female FGD participants stated that boiling was not preferred because it increased the need for fuelwood; some said boiling water changed its taste. Filtering was perceived as too cumbersome. Many women were unfamiliar with solar-disinfecting technology. The information gathered from these FGDs further clarified that water treatment was done only when the source was not a borehole. Borehole water was considered clean and the women saw no need for further purification.

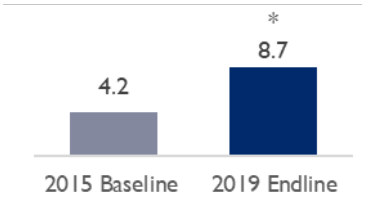
According to district health officials, chlorine is supposed to be issued free of charge every two weeks. Due to resource constraints, though, distribution was limited to just the rainy season (November to April), but is irregular, and cholera "hot spots" are prioritized. Households are encouraged to purchase WaterGuard, which is readily available in shops.

Access to improved sanitation facilities and elimination of open defecation. Sanitation and hygiene were promoted mainly through Care Groups. The first module in Care Group training is Sanitation and Hygiene. Care Group leaders and health promoters in collaboration with HSAs took the messages to individual families, including the requirement for every household to have a latrine, rubbish pit, and dish rack. Efforts in latrine construction were aimed at eliminating open defecation. Through FFA, UBALE supported the construction of some latrines, and Village Heads saw the importance of improving sanitation and for families in their communities to build their own latrines. The study team however, noted that there was no standardized design for the latrines, as they varied in size and shape and all looked very temporary, often with no roof at all. While some people indicated that some of the latrine roofs were blown off by Cyclone Idai, it was also observed that some latrines may never have had a roof. FGD respondents said resource constraints would not allow them to roof their latrines, let alone build a durable structure.

The qualitative data indicate substantial positive changes in peoples' knowledge and appreciation of basic hygiene and sanitation issues. In FGDs, beneficiaries stated that sanitation and hygiene was a critical community need, and female FGD participants highly appreciated the Sanitation and Hygiene module. In FGDs, beneficiaries stated that 70–90 percent of households owned latrines; government officials, in contrast, gave lower estimates of 40–60 percent. Community members stated that in their view, latrine ownership was high because of UBALE's ongoing information dissemination on the topic and because local leaders played an important role in ensuring compliance. Further, FGD participants stated that once families were motivated to build suitable latrines, communities and volunteers saw tangible results from their efforts and used that to pressure those who had not yet complied. Female FGD respondents were excited to tell the story of their new habits. "Go 'round the village, and if you find any evidence of open defecation, let us know," challenged one woman in an FGD in Nsanje District. Others added, "Three or four years ago, we wouldn't have made the same challenge to you," thus emphasizing the change they perceived in their communities. The study team did not witness open defecation during field visits.

Despite FGD participants' enthusiasm and excitement about the results they felt they had achieved in reducing open defecation and other targeted sanitation practices, the expected results from such changes are not supported by the endline survey data. The PBS data show no statistically significant change in the percentage of households using improved sanitation facilities in the overall sample (baseline 34.8 percent; endline 37.1 percent). The percent of households in target areas practicing open defecation actually increased, from 9.4 to 12.4 ($p<0.1$). The contradiction of the PBS data and the perception of village leaders and community members could be explained by all the efforts communities have invested in the construction of latrines, and their interest to show their efforts to reduce open defecation. At the same time, the PBS results suggest that the improved practices in target communities did not extend to the whole population.

Figure 10: Percentage of households with soap and water at a handwashing station at baseline and endline



+ p<0.1,* p<0.05, ** p<0.01, *** p<0.001

Promotion of handwashing with soap by establishing handwashing facilities outside latrines. Across the three districts, the presence of handwashing facilities was limited. In KIIs and FGDs, government officials and beneficiaries acknowledged that the prevalence of handwashing with or without soap after using the toilet was a challenge. While survey results show an increase of over four percentage points at endline, with less than one in ten households having soap and water at a handwashing station, this is an area for further improvement (Figure 10). FGD participants stated that they know that handwashing after using the latrine is important, and that they appreciate the usefulness of the promoted handwashing facility. Yet levels of adoption are low (9 percent in Chikwawa according to district health officials). In FGDs, beneficiaries attributed low adoption of handwashing stations to damage by children and animals and explained that soap (a scarce commodity) is taken by people and birds; thus, soap is not left out at handwashing facilities. Instead, FGD participants explained that after using the latrine, they wash hands in the bathing shelter, where the soap will not be taken. Quantifying change in this context would be very difficult. We know, however, that a handwashing facility with all the required materials raises the likelihood of use. Exceptions always exist; for example, some health officials reported seeing algae in handwashing facilities, a sign of disuse.

4.3.3 Sub-purpose 2.3: Women of Reproductive Age have Improved Agency

MCHN decision-making and increased involvement of men in childcare: UBALE employed a two-pronged approach to improve health decision-making among Care Group beneficiary households: (1) Care-Group-led messaging and discussion tools; and (2) Gender-Champion-led dialogue sessions. CGVs were trained initially in health decision-making and efforts to increase male involvement, with subsequent training on decision-making related to food choices and health-seeking behaviors. Health Promoters rolled out the messages and tools to CGVs in conjunction with the Complementary Feeding

Module and the Maternal Health and Nutrition module, and by Year 4 all 8,121 CGVs had been trained (CRS Malawi, 2018a [Year 4 IPTT data]).

The endline survey data indicate positive change in joint household decision-making related to health. The prevalence of men making maternal health-related decisions alone decreased 16 percentage points, and the prevalence of men making maternal health decisions with joint decision-making increased from 20.1 percent at baseline to 31.9 percent at endline (Annex F). Similarly, regarding child health and nutrition, the prevalence of men making decisions alone decreased substantially, and joint decision-making among men increased over 8 percentage points to 40.3 percent.

These findings are consistent with qualitative data from community-level discussions with CGVs and health promoters. Both groups reported that positive outcomes of UBALE activities were an increase in joint decision-making and overall involvement of men in childcare. Men were reported to be more supportive in ensuring nutritious foods for pregnant women and children; some would help women with household chores; and more men were reported to accompany women for ANC visits and take children to under-5 clinics or to seek medical care when the child is ill.

Adolescent girls' skills to make health decisions improved. In addition to building the capacity of health facility and outreach staff to address youth health concerns, UBALE originally planned to work with Youth Networks and their clubs to deliver a pre-conception health curriculum to adolescents and youth to build their agency and increase demand for health services. There were delays in work with national GoM specialists to finalize the curriculum and materials, and a lengthy approval process from CRS headquarters. Because of these delays in finalizing the curriculum, a shortened project implementation period, schedule conflicts with other trainings, and competing priorities in districts, roll-out of training on this curriculum during UBALE was not completed. Partners delivered the modules to as many youth club members as possible in the beginning of FY19 before staff contracts ended. The roll-out of the final Care Group training module on C-IMCI and the partnership with UNICEF to screen children for malnutrition through active case finding took priority over the adolescent project during the final year of the project (CRS Malawi, 2019).

It bears noting that global best practice guidelines for Care Groups note that teenage mothers require special attention and are more receptive when in groups with their peers rather than in overall Care Groups. Though District Nutritionists pointed out that children of young mothers are the most vulnerable to malnutrition, the Care Group interviews did not reveal any special attention given to this.

4.3.4 Conclusions

UBALE surpassed project targets for decreasing malnutrition in CU5, with a reduction of underweight from 13.0 percent to 8.2 percent and a reduction in stunting from 37.4 percent to 24.3 percent. The nutritional status of CU2, the most vulnerable group and main focus of project activities, showed a significant improvement in stunting.

Though not supported by quantitative findings, the qualitative study team found a widespread perception that community coverage of improved latrines had increased, open defecation was greatly reduced, and WASH behaviors had improved. These factors were thought to result in decreased rates of diarrhea and considered a major contributor to improvements in children's overall health and nutritional status.

A major achievement of the MCHN component was the full-scale implementation of Care Groups, the key component of the GoM community nutrition strategy across all three districts reaching over 92 percent of the MCHN 1,000-day target population. District health authorities credited the nutrition and health impact to a number of interventions, including district-wide coverage, strong capacity-building of community volunteers (CGVs and Health Promoters), use of the GoM curriculum, increased adoption of key behaviors by parents, and improved linkages of the community to health services.

The CCFLS approach, an innovation under WALA and previous programs, was implemented project-wide during UBALE. It proved to be an effective community approach to identify and intervene early with children at risk of malnutrition, and to reinforce parents' adoption of key child-feeding behaviors. The nutritional screening component also provided a vital link for channeling malnutrition cases into the health system. The reduced need for CCFLS toward the end of the project was an early indication that project activities were preventing malnutrition. Grandmother Groups, another innovation identified as important and with high potential to influence family behaviors, was introduced late in the project and had low coverage.

Project partners and health authorities identified the ration[27] provided in the lean season as important not only to prevent spikes in acute malnutrition but to ensure that nutritional gains of project activities were not undermined during the hungry season. The significant reduction in stunting observed among CU2 during the LOA runs counter to predictions of the JMTR;[28] further study is merited to assess the extent to which the lean season ration was sufficient for impact and contributed to project gains.

Community mobilization efforts and integration of Purpose 1 and 2 activities, especially in project communities with intense agricultural support, were successful in linking MCHN 1,000-day households to access to nutrient-dense, diverse foods. Despite the overall deterioration of food access in households and decreased dietary diversity due to numerous shocks, consumption of nutrient-rich value chain commodities, especially OFSP, increased among women of reproductive age and CU2.

Project support for MCHN/WASH structures at district and TA levels resulted in strengthened management systems and revamped DCTs and DNCCs. It allowed them to improve their management plans and train committee members to understand their roles and responsibilities. Viable community structures are in place and ready to collaborate with government efforts and future projects.

While gender dialogues and training through the Care Groups increased the participation of men in joint decision-making related to MCHN, the project component intended to focus on empowering those identified by partners and the health system as most at risk—teenage and young mothers—was not implemented.

4.4 Purpose 3: Communities are Empowered to Contribute to their own Sustainable Development

At the community level, UBALE addressed the governance structures (Sub-purpose 3.1) that were necessary for the project to function and meet its objectives. These structures were groups or bodies

[27] CSB+ and vegetable oil to PLW and children 6-23 months
[28] This finding is counter to that in the JMTR Recommendation U18 (p.27).

with which UBALE interacted and that have a mandate for the governance and well-being of individuals: VDCs, Care Groups, Water User Committees, PSP networks, marketing clubs, Youth Clubs and more. UBALE provided training and support to build their skills and knowledge to implement their mandate while demonstrating the benefits that accrue to everyone when the voices of women, youth, disabled, elderly, and others are heard and their concerns addressed. Activities implemented under Sub-purpose 3.2 strengthened community NRM to mitigate against climate change using FFA, working through VCPCs. Under Sub-purpose 3.3, the project promoted the participation of women in decision-making structures and their agency to speak in meetings.

4.4.1 Sub-purpose 3.1: Improved Governance, Risk Reduction, and Environmental Practices

The UBALE project worked through and reinvigorated government structures and the social scaffold of TAs, providing trainings to village, area and district committees to strengthen their understanding of their roles and responsibilities, organize themselves, plan and monitor their progress, and obtain funding for the activities that they prioritized to improve their communities. Village, area, and district committees were fully coordinated with district and TA government officials to build their credibility and accountability. District government officials interviewed noted the support UBALE provided to strengthen the capacity of the village committees and how the number of issues to be resolved at the area or district level was reduced thanks to proper action by the village committees.

Most of the trainings for the committees were implemented during FY15 and FY16, when UBALE worked with district authorities to define the content and materials for the trainings and built the capacity of government officials to implement those trainings. Committee members from VNRMCs and VCPCs shared that they appreciated the trainings and asked for refresher training in fundraising and resource mobilization, as the trainings improved their governance and capacity to define and implement their plans. During the LOA, UBALE trained 7,662 community members against an original target of 7,715 (99.3 percent) and reached 108 percent of target for female participation (Indicator 3.8c) in Participatory Planning, Monitoring and Evaluation. A total of 4,789 men and 3,641 women received governance training, a 90.9 percent achievement (Indicator 3.8) (CRS Malawi, 2018a [Year 4 IPTT)). Focus groups confirmed that training was given to VDCs, ADCs and other groups. One FGD in Chikwawa explained that this training was crucial because these committees carry messages, give hope, and coordinate all project activities in an area. The FGD participants said that the VDC and ADC determine the project's success since they handle everything in the community up to the district level. This underscores the importance to community development of well-trained, knowledgeable committees.

At the time of the qualitative study, six months after UBALE ended project activities, VCPCs and VNRMCs were active and working at different levels promoting risk reduction activities, monitoring the coming raining season, setting contingency plans for possible floods, and working with nurseries to continue reforesting and protecting riverbank areas. Participants in a FGD in Nsanje District stated that the VCPC is very important for the people because it helps in times of emergencies, brings unity, and supports community preparedness, response, and recovery. This shows the importance that communities and their leaders placed on working together to reduce risks and protect their environment.

> ***Now we are able to have our duties and responsibilities well defined. In the beginning we were just doing things anyhow and things were not going well.***
>
> - **ADC chairperson**

The qualitative study team talked with members from the VNRMCs and VCPCs that had constitutions and were recognized by the government and TAs. These committees were working on different government initiatives (NRM and risk reduction) and coordinating with other programs. This was a result of UBALE's efforts to support 1,098 committees throughout the LOA: 1,018 have constitutions in place (92.7 percent achievement) (Indicator 3.6) and 780 (71 percent achievement) developed action plans to improve governance, reduce risk and enhance environmental practices (Indicator 3.7) (CRS Malawi, 2019 and CRS Malawi, 2018a [IPTT data]). UBALE trained 100 percent of the planned number of committees but did not meet the targets for the number of members trained for some trainings. One reason for this is that in some instances, such as resource mobilization and NRM, only specific committee members participated in the trainings, based on their positions and experience.

The project targeted 80 percent of committee structures scoring 80 percent or higher on the "scorecard" capacity assessment tool. The purpose of the scorecard was to monitor progress and enable Resilience Field Officers to discuss needed improvements with the committees.29 At the end of the project, only 47 percent of VCPCs, 39 percent of VDCs, 52 percent of Area Civil Protection Committees (ACPCs) and 55 percent of Area Development Committees (ADCs) scored 80 percent or higher (Indicator 3.1). There was frustration with the lack of progress on the scorecard scores. Perhaps the target was set too high, considering that most committees scored less than 50 percent at the beginning of the process. The main components that groups struggled with related to self-financing and sustainability. Over time, the scores did increase and through studies by the University of Notre Dame, UBALE was able to show that the capacity of the committees to work as a committee and with other groups was increasing, even though scorecard scores had not exceeded the target. Nevertheless, as described in the FY19 ARR (CRS Malawi, 2019) many groups scored over 70 percent at the end of the project, and there was evidence of successful capacity building. For example, one former VDC chair told the study team that as a result of the UBALE training, the VDC and ADC have submitted proposals to local government for funds to create a health center and a secondary school.

The study team observed VCPCs confident in their capacity to mitigate and respond to DRM issues. While many were not financially self-sustainable and depended on external financial support to respond to emergencies, they had constitutions, understood their roles and responsibilities, developed asset maps and plans, and were implementing those plans in their communities. Even after the end of the project, the study team saw functioning VCPCs coordinating with community leaders and government officials to prepare against coming floods.

Rotation of committee members during the LOA affected the performance of the committees. During a FGD with VCPC members, participants indicated that sometimes the committee had to include a new person, as the previous member moved away from the village or did not want to participate anymore. As new members did not receive training, this affected the performance of the committee.

[29] The scorecard percentage is computed by dividing the total score for the group by the maximum score possible (125).

UBALE partners worked with all 264 GVHs and trained 4,098 individuals (2,352 men and 1,746 women) in resource mobilization (Indicator 3.8e) (CRS Malawi, 2019 [IPTT data]). This training focused on key members of the committees within the communities to develop teams that could produce proposals. Overall, the project achieved 56.2 percent of the LOA target set, expecting that all members of the committees would participate. A total of 4,581 men and 2,990 women were trained in DRM, exceeding the target (6,785) by 11.5 percent. A total of 1,708 men and 1,313 women were trained in NRM (50 percent against target) (CRS Malawi, 2019, ARR).

One challenge encountered in the final year of the project was a national directive issued by the GoM ordering that all VDC membership be rotated. UBALE officials argued that such a move would jeopardize the many gains realized through building the capacity of the standing VDC members. A compromise was made whereby only 50 percent of the members would be rotated out in 2020. It will be a future challenge for government authorities to continue supporting local committees, as trainings will be necessary for new members.

4.4.2 Sub-purpose 3.2: Communities Have Productive Assets

Most of UBALE FFA works are to strengthen community NRM to mitigate against climate change, working through VCPCs. These committees worked closely with FFA works in the communities where proposals were approved, supporting the management and maintenance of the works after the asset were completed.

Over the LOA, UBALE supported 48,630 individuals with productive safety nets (Indicator 33) using FFA: the project provided technical support for the creation of productive assets, and rations of pigeon peas and vegetable oil for FFA participants. Community members prioritized which assets to rehabilitate or create, organized themselves, and identified vulnerable individuals who could participate in the FFA activities The project established 588 assets, of which 374 were recorded in the IPTT while the others were part of the El Niño response (Indicator 49) (CRS Malawi, 2018a [IPTT data]). UBALE supported 126 watershed management assets across the communities over the same period.

In interviews with the study team, several VNRMCs and VCPCs noted the importance of FFA activities to rehabilitating and creating community assets including soil and water conservation structures, roads, and riverbank protection areas, and through reforestation. Village committees and participants appreciated the creation or rehabilitation of assets and the support to vulnerable individuals, though some FGD members stated that they received fewer FFA rations than promised, which reduced morale and motivation to finish the programs. They also suggested locally purchasing pigeon peas for the FFA ration in order to support local farmers.

UBALE closed activities six months prior to the qualitative study team's visit; however, village committees continued to support nurseries and plant tree seedlings along watersheds and riverbanks to mitigate soil erosion and deforestation, improve water retention, and provide shade and groundcover in support of agricultural production. The continuation of community organization and the ongoing interest from local government indicates that these activities are valued by the community.

4.4.3 Sub-purpose 3.3: Women Participate in Decision-Making Structures

UBALE delivered a variety of gender messages to promote greater participation by women in decision-making structures at different levels. During the LOA, UBALE Gender and Sustainability Field Officers and community Gender Champions delivered 27,556 dialogues,[30] 167 percent of target (CRS Malawi, 2019). All 264 GVHs were trained in Gender, Equity and Diversity, which reached 7,228 community members plus the 637 Gender Champions against an LOA target of 9,275, thus achieving 84.8 percent of target (CRS Malawi, 2019). However, the project noted a discrepancy in its annual surveys, where the number of participants reporting that they heard gender messages and who could cite three or more key messages did not reflect the large number of sessions held. In FY19, only 25.7 percent of men and 19 percent of women could cite three or more of the nine gender messages (CRS Malawi, 2019). Project staff thought that this might be because gender messages were often presented along with other messages at community events, rather than through household visits (CRS Malawi, 2019). This suggests that awareness and absorption of gender messages may have been diluted when heard along with other community business. On a positive note, the messages most commonly retained included the importance of women's participation in community decisions and of encouraging women to be leaders (CRS Malawi, 2018a).

In a qualitative gender study conducted in the UBALE project area in 2015, both men and women confirmed that women already had significant influence in VDCs and VS&Ls, which are considered important community institutions (CRS Malawi 2016f). Women's influence in VDCs was largely attributed to the GoM 50:50 campaign for women's equal representation and voice in leadership roles. In contrast, the study found that women had much less representation or influence in ADCs, VCPCs, and community policing committees. Women cited social, educational, physical safety barriers to membership in these important committees, while men were found to be largely unaware of the gender discrimination that existed.

In the endline survey, 60.5 percent of respondents (63.3 percent male; 57.8 percent female) said that community leaders encourage women to participate and take up leadership roles in their community. Only 28.4 percent (31 percent male; 25.8 percent female) said that community leaders sensitize communities on the importance of female participation, which could be attributed to the presumed lower absorption rate of gender messages during community meetings. The more positive response among men may be an indication that men's awareness of the extent of gender barriers faced by women remains lower than women's awareness of same.

The percentage of women members in community committees reached 46 percent (92 percent of target) (Indicator 3.14) over the LOA. Additionally, 56 percent of marketing club members and 75 percent of SILC group members were women. The qualitative study team spoke with women participating in different committees including VDCs, VNRMCs, WPCs, and VCPCs. The team found that women held decision-making posts including chairperson, vice chairperson and treasurer, and that the number of women in the committees was similar to the number of men, though in some WPCs, there were more women than men.

[30] Of these, 23,324 were delivered by Gender Champions (Indicator 3.19).

UBALE specifically promoted the participation of women at the decision-making level to increase their agency to speak in meetings. In FGDs, women stated that they were empowered to speak publicly. A male VDC Chair in Nsanje acknowledged that men can sometimes dominate group discussions, but that the VDC promoted open discussion and encouraged women to participate so that men and women can decide together what to do. While talking to a VNRMC in Nsanje, the study team observed discussions between males and females about technical issues over the activities to be implemented and how to implement them. Men were arguing about the importance of protecting grazing areas, while women were speaking about how to protect the riverbank for farming. This interaction was a good demonstration that women and men were equally able to speak with conviction and reach consensus about priorities in a mixed group.

4.4.4 Conclusions

From its conception, UBALE was designed to build the capacity of local government and community structures to implement project activities. Trainings, follow-up, and most importantly, partnering and delegating responsibility to conduct these activities, have built and improved the governance capacity of village, area and district officials. The qualitative study team found active and thriving committees that possessed knowledge of their roles and responsibilities and that coordinated to identify issues and solutions and implement actions for the good of the individuals in the community.

As part of UBALE's activities, community members participated in the rehabilitation and creation of community assets. Project staff, government officials, and TAs supported the identification of vulnerable participants who rehabilitated or constructed community assets. These assets will improve the sustainability of natural resources and protect the productivity of farmland, and could be linked to a watershed management strategy.

UBALE's gender activities promoted support among community members and leaders for women's participation in decision-making structures. Participants reported that there are more women on different committees and holding higher-level decision-making positions, and that women are more empowered to voice their opinions at the community and family level.

4.5 Unintended Outcomes

The evaluation used quantitative and qualitative methods to identify and discuss unintended positive and/or negative consequences of the project. It was a challenge to separate unintended outcomes from the project from those due to external shocks, especially as the project had ended six months prior to the qualitative interviews.

Excess supply of pigeon peas: As discussed under Purpose 1.2, one explanation offered for the decrease in farmers practicing promoted value chain activities was farmers' negative experience with the pigeon pea value chain. Bumper crops in India and China and a protectionist import ban in India left many Malawian farmers with no market for their pigeon peas in 2017 and less enthusiasm among project farmers for this crop in subsequent years. While the glut of pigeon peas in the local market was an undesirable outcome under Purpose 1, the excess supply and lower price made this nutrient-rich food more accessible for household consumption and contributed to improved diets under Purpose 2: the PBS survey results indicate a significant increase in the percentage of both women of reproductive age

and CU2 consuming targeted, nutrient-rich value-chain commodities despite decreased consumption observed for other food groups. Interviews with health staff and FGDs in the community identified how the project promotion of pigeon peas and cooking demonstrations worked well in an environment with surplus supplies to reinforce messages encouraging consumption of legumes and nuts as part of a healthy diet.

Increased workload for women. Women had access to all project activities, which in some cases appeared to increase their workload and the demands on their time due to their participation in committees and other groups. The potentially negative effects of women's extensive participation in project activities were counterbalanced by the additional support women said they were receiving from men on household chores as a result of the gender training. Women expressed that their increased level of participation, respect, and decision-making eased tensions in their households and reduced the number of incidents of gender-based violence in the area.

Coercion to build latrines. One negative unintended outcome was that, in an attempt to compel project participants and other village residents to build latrines, some local leaders denied medical attention to those families who had not dug their latrines. The qualitative team was told in two different areas in Chikwawa that some GVHs enforced latrine ownership by recording in a participant's personal health book whether or not the household had a latrine; when these participants went to the health center they were denied medical attention until they constructed a latrine. This coercive measure did not appear to be common; however, it denied an essential service to people who required it, regardless of their ability to construct a latrine. Project and government staff could have identified where this was happening and informed local village chiefs that denying access to medical attention was not an acceptable way to promote latrine construction.

4.6 Factors Contributing to Outcomes

4.6.1 Working through Government Structures

By far the most important factor that drove the attainment of outcomes was UBALE's strategy of implementing activities through standing government structures. UBALE worked with and through existing government staff, where government officials promoted and coordinated project-supported field activities with traditional leaders and communities. UBALE's approach of strengthening local service providers by working through them was successful, to the degree that some KIIs and FGDs said that UBALE was not working in their area but praised the support they received from the AEDOs, the Forestry Department, the Lead Farmers and others that were implementing activities in partnership with UBALE. Project participants did not always recognize that the benefits from the project actually came through UBALE. During FGD many participants did not realize that UBALE had ended, in part because government officials continued to coordinate activities with their communities, which underscores the importance of the project's approach to strengthening existing government services.

Levels of success nonetheless varied from district to district and within a district among different government ministries or departments; a significant factor in success was the nature of the relationship established between project staff and the government ministry staff. For example, in health, the relationship was very positive in two of the districts (but problematic in the third); this was demonstrated by the notably close collaboration with HSAs and promoters at community level. UBALE

was credited with having revamped the DCTs and DNCCs, which was an important platform for multi-sector coordination, involving staff from ministries of health, agriculture, education, and gender. Further, working through ADCs and VDCs made local leaders the drivers for attaining intended outcomes. Finally, UBALE's activities supported the government agenda and national policies, thereby helping local officials to fulfil their responsibilities and strengthening collaboration.

4.6.2 Working with Local and Traditional Authorities

Another factor that played an important role in achieving results was the strong buy-in from traditional leaders, which resulted in innovative ideas for reinforcing mobilization, participation, and compliance. The involvement of these leaders ensured full implementation of project activities and identification of participants. FFA and WASH activities were clear examples where traditional village chiefs were determined to improve NRM, to improve hygiene and health conditions in the village, to ensure payment of user fees at water points, and to construct latrines at household level, and were thus instrumental in the success of activities.

4.6.3 Integrated Design and Approach

An integrated project design and approach provided multiple opportunities to reinforce messages between Purposes and to complement and integrate activities at the community level. Interventions in agriculture provided a comprehensive package of crop management and NRM practices that increased crop yield and the sustainability of natural resources. Linked with savings and income generation, these activities supported food access and availability. Purpose I activities were directly connected to MCHN and WASH activities to strengthen food utilization at the family level. Purpose 3 activities strengthened community organization to implement project activities.

Implementation of the project through GoM structures and systems provided the initial medium for the coordination and integration of UBALE interventions with the government's own projects. This coordination, in turn, facilitated integration between and within project components/ Purposes. Within Purpose 2, the coordination between Care Groups and WASH led to the integration of services. For example, the first module in Care Group training was sanitation and hygiene. In terms of integration between Purposes, FFA was used to ensure health centers had latrines. Additionally, GVHs and village heads used access to rations as a tool for ensuring latrines were constructed.

4.6.4 BNC SACCO will need Ongoing Financial and Management Support to Be Sustainable

The establishment of the BNC SACCO in the last year of the project did not allow adequate time for the institution to build the membership and financial base required to ensure its operational viability and long-term sustainability. By the end of the project, the SACCO was operating at a loss. The SACCO's inability to support itself financially created a substantial risk for investors, which included individual VS&Ls, cooperatives, and PSP savings groups, which would lose their savings if the BNC SACCO failed. USAID and CRS brought in World Council to perform a diagnostic on the SACCO's management and financial health and to develop scenarios to secure additional funding and help prevent default. With this assistance, the SACCO was able to secure additional financial support after the end of the project, but its long-term sustainability is still not proven.

4.6.5 External Shocks

The project area suffered external shocks four of the five years of the LOA. External factors including floods, dry spells, uneven rainfall (El Niño 2015/16), pests (fall armyworm 2017), and market changes (pigeon pea price drop 2016) affected production and sales in the target area during the LOA. In March 2019, the same month that project activities concluded, Cyclone Idai destroyed much of the crop in Chikwawa and Nsanje; this had negative effects on WASH because floods caused by the cyclone destroyed many toilets, unwinding some infrastructure gains. These external factors affected food availability negatively and required adjustments to project activities under Purposes 2 and 3. Based on discussions with IP staff, external shocks were large enough to affect the whole population (project participants and non-participants) during the LOA; this is captured in the PBS endline results. For example, according to PBS endline data, the mean depth of poverty in the survey area for the UBALE project was 25.4 at baseline and increased to 30.4 at endline ($p<0.5$).

4.6.6 Project Delays; Misalignment of Project Cycle and Agriculture Calendar

Funding delays during the first years of the LOA reduced the time available within the LOA to train, transfer and implement agriculture activities. The fiscal year starts in October, as does the agricultural year in southern Malawi; land preparation for the rainy season commences in December. Hence the delayed funding in the initial years created a challenge for the timing and implementation of agricultural activities, particularly the demonstration plots that were key to disseminating information and new technologies.

Some IPs had institutional resources from other projects that allowed them to support project activities until funding arrived. However, those without this financial backup had to delay project activities until funding was available, which put mid-term and long-term plans in Purpose 1 at risk.

There were also delays caused by different technical issues. For example, because of the (correct) decision to implement Care Groups after the GoM had finalized the revisions of the curriculum and materials for Care Groups, and a lengthy approval process from CRS headquarters, the implementation period was shortened; other factors that confounded timeliness were schedule conflicts with other trainings, competing priorities in districts, and budget and staffing constraints.

4.7 Contribution of Activities to Mitigation, Adaptation to, and Recovery from Food Security Shocks and Stresses

UBALE promoted multiple activities that effectively contributed to the mitigation, adaptation, and recovery from food security shocks and stresses. Per project design, UBALE disseminated a strategic package of agriculture and natural resource conservation technologies to improve agricultural production, conservation, reforestation, riverbank protection and other activities to reduce soil erosion, increase soil fertility and farm sustainability. These activities were appreciated by government officials, village committees and farmers to improve community-level sustainability and adaptability to external shocks. At the time the qualitative study team visited the impact area, VNRMCs were continuing to work with nurseries to produce and plant trees to reduce erosion and increase water retention, and lead farmers were continuing to implement baby demonstration plots and to share knowledge and technologies with other farmers.

Farmers learned to adopt different technologies to cope with external shocks and strengthen their resilience capacity. A clear example was the use of a drought-resistant variety of sesame: farmers learned to use hybrid maize seeds in irrigated areas; if floods affected these areas, they might lose their maize crop but would have time to plant sesame (a new technology) and produce a crop that would provide some income after the floods.

The project also promoted learning clubs as a mechanism to identify problems and replicate innovative solutions at the local level, working with farmers and extension agents. The MoAIWD continues to support this mechanism, whereby farmers experiment and share experiences about cultural control of pests like the fall armyworm and other experiences.

SILC groups became a crucial means of building resilience at community level and for helping households to prepare for and recover from shocks. The study team heard from different groups that their membership in SILCs gave them access to a place to save, many for the first time. SILC participants used savings and loans to restock their seeds, rebuild their houses, start new businesses, and recover from external shocks.

As part of coordination efforts with government officials, VCPCs and VNRMCs continue monitoring weather conditions to plan and inform villages and farmers of contingency plans in case of floods and dry spells. At the time the study team visited the project communities, some VCPCs had already pre-selected sites to host families in the event they were affected by floods.

4.8 Beneficiary Satisfaction

The qualitative study team found ample examples of beneficiary satisfaction at the individual, community, and district levels ranging from agriculture and NRM, MCHN and WASH activities to community participation and mobilization. The team was careful to obtain and assess a range of opinions and to take in account that people might be reluctant to express negative opinions. FGDs and KIIs in different locations expressed their satisfaction with the project and the study team observed farmers' and other participants' continued use of project-promoted practices, a clear indication that the design and implementation of the project was relevant and responded to the needs of the population in the target area. Some areas of dissatisfaction were a function of project delivery strategies rather than project content or design.

Some examples of beneficiary satisfaction are farmers' continued use of agriculture, conservation and NRM practices, and the continued promotion of these practices by AEDOs. SILC groups continue to grow in target areas and the majority of PSPs interviewed receive payment from the SILC groups for their services. Care Groups continue to function, and members are proud of their role in their communities and of the improved health of their children. The modules used to train MCHN participants and the promotion of locally available food were highly appreciated by health extension workers and participants as they learned new skills that were easily adopted. Women and men appreciated the rations distributed to participants, which helped and encouraged them to improve their children's nutrition. WPCs are addressing and solving issues at the community level; water was available throughout the year as they were able to undertake routine borehole maintenance and repair. They had become, in their own words, "believers" in the sanitation and hygiene messages disseminated through

UBALE; attitudes toward sanitation and hygiene have undergone a permanent change. Women participate more at the community level and told the study team that they are happier that men understand and share their roles at the family level. Members from different committees also appreciated the initial trainings that helped them to understand and implement their roles and responsibilities as project participants and were highly motivated to implement project activities.

Some areas of dissatisfaction were a function of project delivery strategies rather than project content or design. Areas of dissatisfaction that the study team heard from participants were around the number of people who could directly participate in trainings and project activities. This was an issue in Purpose I activities, where the number of vulnerable farmers overwhelmed project capacity and resources. Many participants mentioned that the DiNER fairs were valuable but that relatively few farmers were selected to receive vouchers. Timing and location of FFA distribution was another area where participants thought there could have been better security and accountability, as in some cases rations were delivered after the FFA activity was finalized and at a location far from the village. According to government standards, the number of training days for VCPCs, VDCs, and ACPCs was expected to be five; however, due to budget constraints, trainings were implemented in three days. Apparently, the trainings covered all essential topics, but participants perceived that they needed more days for training or that they did not receive all the training that they "should" have based on the government standard.

Table 3: Beneficiary Satisfaction

Satisfied	Dissatisfied	Mixed Satisfaction
• More diversified crops and higher yields through low-cost, simple technologies • SILC groups and access to savings and loan services • Marketing clubs have increased sales volume • Seed multiplication groups increased supply of seed and sales • Care Groups, curriculum and learning from community volunteers • Hygiene education through the WASH module • Role of Health Promoters • Practical solutions to improve diets and new knowledge acquired; new recipes learned • Visible improvements in children's health • CCFL activities and learning; emphasis on	• Delays in FFA payments for NRM activities • Demonstration plot inputs delivered a month late in 2016 and 2017, after farmers had planted their crops • No water provision element in the design of the project • Water systems in health centers • No community system to address discrepancies in ration beneficiary lists • Only three-day training (VCPCs, VDCs, and ACPCs) • Some village leaders using coercion rather than persuasion on latrine construction • Being asked to purchase WaterGuard (b/c chlorine is supposed to be issued	• DiNER fairs provided access to seeds and information but limited the number of participants • Value chain development mixed according to product • Erratic water quality monitoring • Making monetary contributions to the WPCs for repairs • Ration much appreciated and appropriate for lean season, however some concerns with quality/variations in taste, distance to distribution points, and understanding related to the age at which the child is no longer eligible

Satisfied	Dissatisfied	Mixed Satisfaction
common locally available foods • Chlorine provision/ distribution • Grandmother groups • Gender dialogue discussions and increasing role and understanding of men • Community VCPCs, VDCs, and ACPCs appreciated the materials and learning from the trainings • Use of government materials and staff to implement trainings	for free by district health officials) • Absence of formal project close-out ceremonies left participants uncertain about the end of the project	

4.9 Coordination

Implementing UBALE activities required a high level of coordination, communication, and planning with multiple actors, levels and sectors within the implementing districts involving Ministries of Health, Development, Social Affairs, Agriculture, IPs, and local structures. Overall, this was done successfully while supporting and strengthening the capacity of the government to deliver services in the target area. Coordination was a key requirement for successful project implementation: partners had to coordinate among themselves and with government offices while they sought to build capacity and implement activities through government structures. Coordination also helped create synergy between UBALE interventions, those of other implementing organizations, and the government's own projects, in line with the Malawi Cooperative Development Strategy.

During the LOA, UBALE coordinated and collaborated with several programs implemented directly by its partners, USAID-funded programs, and programs of other development organizations. WFP coordinated actions with UBALE during the lean season response and on FFA activities, which enabled coverage of a larger number of communities and beneficiaries. UBALE also worked with Feed the Future's Agdiv to promote PICs bags, which was also supported by the Bill and Melinda Gates Foundation and Purdue University. Coordination and complementarity also occurred around humanitarian programs implemented simultaneously with UBALE in response to multiple emergencies during the LOA. With support from USAID and other donors, UBALE partners mounted an emergency response separate from the project after the floods from Cyclone Idai in 2019. For example, CARE distributed WFP food to 18,000 flood-affected households in Nsanje. CARE International also raised external resources to respond to the 2015 flooding emergency, using the funds to drill 25 boreholes in areas where people had been relocated due to flooding. UBALE trained the WPCs for these boreholes.

To promote coordination among partners, the CRS Project Management Unit (PMU) established a Technical Working Group and scheduled regular meetings for IP senior staff to meet and discuss plans, achievements, and technical issues. This platform provided a space for discussions and planning on how

activities were implemented, monitored, and reported. Some best practices were shared during these meetings but were not always implemented by all. By the time of the final evaluation all management structures and most of the staff managing UBALE were no longer available; consequently, the qualitative study team was not able to see coordination mechanisms in practice. However, during discussions with IPs, it was mentioned that staff changes during the LOA affected the flow and consistency of communication and the continuation of actions. The PMU and the IPs defined a list of designated staff to attend the Technical Working Group, and closely monitored attendance. UBALE IPs felt that decisions and communication were not always shared or followed through; for example, partners indicated they were asked to provide information to the PMU for quarterly, semiannual, and annual reports but were not given copies of the final versions submitted to USAID. UBALE district-level partners said they collected monitoring data regularly for UBALE, but the data analysis was not shared, which would have allowed them to review the aggregated data and assess their results.

At the district level and internally, IPs held monthly meetings coordinated by program managers to discuss plans and achievements in the different project Purposes. Funding delays and event cancellations due to unforeseen events such as floods seriously affected meeting schedules. IPs confirmed that CRS provided funding and back-stopping visits to ensure the activities were implemented.

UBALE supported monthly meetings with the officials of the District Executive Committee (DEC) to coordinate district-level project implementation. All IPs at district level were expected to attend. Follow-up on the meetings was affected by changes and/or cancellations of the meetings, and sometimes by the absence of partners or government staff or by the attendance of staff who did not work directly with the project. The District Assembly produced a schedule for the DEC meetings and a list of staff authorized to attend. To ensure participation of relevant government staff, participants not on the list were excluded from refreshments and meal allowances.

During the LOA, additional technical meetings were planned and implemented including capacity building (trainings, etc.) with relevant government line ministries and meetings with government structures, e.g., VDCs and ADCs. This schedule was also affected by postponed or cancelled meetings, by government officials who were not connected with the project being sent for training, or by government staff wanting to leave before the training was completed. The degree of coordination between IPs and district governments differed by district. In some locations IPs worked side by side with district officers. In other districts there was less coordination and cooperation, or the government and IPs worked very well together under one Purpose but were not coordinated on other Purposes.

The qualitative study team discussed with government officials and IPs examples where coordination was successful at the district level. One example was MCHN support in Rural Blantyre, where four TAs were supported by WFP and the rest were supported by Save the Children; the coordination among all TAs for UBALE work, as well as with other activities, was described as effective. For WASH activities, the project's coordination with the DHO and DEHO within the DCT arrangement was notable, as was UBALE's work with the HSA and Health Promoters at the community level. Because of the project's close coordination with government health providers, families were able to obtain chlorine for treating drinking water and to attend WPC trainings. UNICEF, through the Ministry of Health, supported water quality testing and the distribution of chlorine at all water points. PSPs were registered as associations and are linked to the district Department of Community Development, which is responsible for

overseeing the VS&L activities. UBALE worked with the Livestock Department to train Community Animal Health Workers as paravets, who support government Assistant Veterinary Officers and communities.

Overall, collaboration with government went well, though this was not without exceptions. Some government officials told the study team that they felt at times partners were too possessive of some elements of the project.

4.10 Gender Considerations

UBALE built on government policies and previous programs that promote gender balance in community structures and equal participation of women in decision-making at the household and community levels.

As discussed throughout the report, UBALE embedded a gender approach in all activities as part of the project's design. In its first several years, UBALE took advantage of previous programs and government interventions that promoted gender dialogues. The Gender Champions who supported the integration of gender into project activities at the village level were introduced in Year 3 but were still able to reach a large number of project participants despite the later start. Not only were messages and equal participation integrated into project activities; UBALE also promoted women's participation in all local governance committees and activities. The qualitative study team heard from different project participants about the expanded role of men in household, farming, and childcare tasks, and that most households changed from men-only decision-making to joint decision-making.

Women are also taking a leading role in facilitating change in the area through decisions coming from them. For example, a woman who chairs the School Development Committee facilitated coordination meetings between the PTA, school management committee, and local leaders to discuss how best the School Improvement Plan (SIP) could be best handled. In the end things improved, as business in SIP was done in a transparent manner.

- **Gender Champion in Nsanje**

WPCs emphasized the need for having more women than men in these committees due to the critical role women play in issues concerning water, hygiene and sanitation. All WPCs interviewed had either an equal number of men and women or more women than men. It was further observed that women held influential decision-making positions in local committees. In this regard and in subsequent trainings to the WPCs, the role of the Gender Champions, as already noted, was quite important. FGD participants in Chikwawa said that cases of gender violence have been reduced in their community due to Gender Champions working hand-in-hand with local leaders.

Another area of successful integration was seen in the influence of gender champions on WASH interventions. Gender Champions were reported to have facilitated the active involvement of women, especially in WPCs. It was stated that Gender Champions helped women to have the courage and self-belief that enabled them to freely vie for positions in the WPCs.

4.11 Environmental Considerations

Technologies promoted by Purpose I were designed to reduce soil erosion, increase fertility and water conservation, promote crop diversification, and increase yield. Government officials and participant farmers supported these activities and told the study team that they had a positive impact on the environment. The integration of agriculture with tree conservation, reforestation with different species, protection of riverbanks, use of contour curves, and other activities reduced soil erosion and increased water conservation. Farmers and VNRMCs continue working on these activities even after project end.

WPC trainings were envisaged to address elements of hygiene around the water points. Responsibilities included scrubbing the apron, clearing around it and establishing proper drainage. In most cases the immediate surrounding of the borehole apron was clean. However, proper drainage into soak-ways was hard to see, and the water was dirty. From an environmental point of view, this was not safe, as the stagnant water could provide a breeding ground for mosquitoes and bacteria.

During visits to the villages the qualitative study team did not observed any sign of human fecal matter. This observation was validated by village chiefs and government officials during FGDs and KIIs, who demonstrated a strong interest in promoting hygiene at the village level with latrines. However, the team observed that animal fecal matter was an issue, as animals roam freely everywhere.

4.12 Sustainability

Achieving sustainability of project-initiated activities requires a continued flow of resources, sustained technical and managerial capacity of service providers (especially government), and continuing motivation among project participants beyond the life of the project. Often, these interrelated factors need to be further supported by strong vertical linkages between participants and local government, the private sector, and other organizations or groups that can continue to promote institutions and practices introduced by the project (FANTA III 2015b).

UBALE's strategy promoted these fundamental requirements of sustainability in several important ways: strengthening the capacity of government and traditional governance structures to implement government policies and organize communities, promoting low-cost technologies and locally available inputs, building on government policies to implement community health approaches, and supporting participants to acquire skills that yield clear and tangible benefits. While still early to ultimately assess sustainability, the qualitative study team observed that six months after the end of the project, participants were continuing many of the activities promoted by UBALE.

The study team discussed with project participants why they continued to implement UBALE activities. For Purpose 1 activities, farmers stated that they continued to practice conservation agriculture techniques because they could see the improvement in their soils and yields. District agriculture officials confirmed that farmers had diversified into faster-maturing, more nutritionally varied crops. Marketing club and marketing association members reported that they were selling a larger volume of crops at higher prices as a result of the training from UBALE. Seed multiplication groups continued to operate and were identifying buyers with the help of the AEDOs, though a formal link with NASFAM would have offered more market opportunities. Membership in SILC groups continued to grow as women and men

found that the groups provided them with much greater access to savings and credit instruments than previously, which in turn enabled them to start new businesses and to improve or rebuild their livelihoods. PSPs continue to form new groups. SILC practices follow government guidelines, and PSP associations are recognized by the District Development Councils, reinforcing the vertical links to government that support sustainability.

The CAHWs are appreciated by communities and accepted by district governments, but their sustainability is based on a fee-for-service model and people are not always willing to pay. The fee-for-service model works well for SILC PSPs but varies for marketing group PSPs, who must deal with poor production seasons and competitors who offer similar services for free. Payment of fees to maintain the marketing PSPs is important as marketing clubs have only a few years' experience and need more time to mature and become more effective at negotiations.

UBALE's most ambitious financial services endeavor, the establishment of the BNC SACCO, is not sustainable without substantial ongoing financial, technical and managerial support from government and external organizations, which puts not only the institution at risk but the investments and faith of the people who have entrusted it with their money.

In the case of Purpose 2, UBALE helped to strengthen the government's MCHN/WASH structures and service quality at district and TA levels, while creating demand for more accountability from people for child health and nutrition and WASH efforts at the district level. Care Groups are a key element of the government's community nutrition strategy, and the linkage with ministry strategy is an important component of sustainability. Women and men continued to attend Care Groups after the ration was discontinued because they saw improvements in their children's health and nutrition. The Care Groups also continued because CGVs felt they had acquired valuable and practical knowledge and wanted to continue to help families with young children. Similarly, the project enhanced the functionality of WPCs by making them aware of their roles and responsibilities as well as how to execute them. There were strong indications that the committees would continue in their role, including that of collecting user fees, which are integral to WPC functions. The link to government structures and processes helped to also bring on board services from other players like UNICEF, especially in terms of continued water quality testing.

The adoption of latrines was widespread, and communities were proud that open defecation had ceased, but the poor quality of latrine construction observed in many places raises the question of whether the latrines will be properly maintained.

Under Purpose 3, village committees continued to mobilize and organize people to conduct NRM activities and prepare for potential external shocks to reduce the loss of household and community assets, although financing remains a challenge. District-level government officials stated that the presence of organized committees in UBALE communities facilitated their efforts to continue supporting agriculture, health, and development extension activities. A major achievement of UBALE was strengthening and building the capacity of government and traditional structures to monitor and implement extension work in all target areas.

While UBALE was successful in increasing the resilience of households and communities to shocks, given their scale and frequency, shocks are likely to continue to affect participants' ability to sustain the level of gains they made as a result of the project.

UBALE's practice of working through government structures, including the DADOs and AEDOs under Purpose 1, the health officials under Purpose 2, and both district officials and traditional leaders under Purpose 3, created strong buy-in to the project while strengthening local capacities. The study team believes that this strategy increased the likelihood that the districts will be motivated to continue to support activities initiated by the project.

While there is good coherence between UBALE initiatives and government policies, in 2019 the GoM decided that VDC membership should change, which would jeopardize the gains realized through the capacity building of existing members. A compromise was reached where only half of the members would change in 2020; however, unless the government continue to trains new members the VDCs may become less effective. Likewise, the WPC committee members serve for a defined period, so sustainability will require that the government continue to conduct WPC trainings for new members on a regular basis.

The emphasis on gender equality across all activities has, according to participants, changed attitudes among men and women around sharing household chores and decisions. Families have benefitted from improved domestic relationships and reduced gender-based violence. Greater gender equality has given women more time and freedom to participate in community activities and committees, where the benefits of their conscientiousness and organizational skills are acknowledged by men.

While the capacity and motivation aspects of sustainability were observed to be in place, activities that required external inputs have not continued after project end—not because the activities were not appreciated or necessary, but because they required financial support. There were reduced field monitoring visits and fewer planning and review meetings by the district offices, whose ongoing support is key to sustainability. The study team observed that in the long run this may have negative effects on processes that require close and frequent supervision, which may in turn affect motivation. For example, it was expected that the government would assume the organization of DiNER fairs. District officials appreciated the opportunity to work with farmers and saw the benefits of exchanging information and having access to agriculture inputs, but without financial support it has been difficult for the government to replicate these activities. At the time the study team visited, government officials were negotiating with other organizations to implement activities similar to the DiNER fairs.

The limited role for youth in the project missed an opportunity to promote social and behavioral changes that would influence the next generation.

4.13 Lessons Learned

Among the many lessons that can be drawn from the UBALE are:

Implementing through existing government structures promotes sustainability. Working within government and local structures supports the capacity of government officials and committee members to monitor and implement not only project activities, but in the long run, government policies and

projects. Although it requires more coordination and communication to plan and implement activities, the process supports and transfers these and other skills to government officials.

The UBALE experience shows that strengthening government and local traditional structures builds the capacity of government officials and community members to implement proper actions at large scale in a sustainable manner. Future food security projects need to follow the practice of incorporating and supporting government policies and national projects and support their implementation to build long-term government and traditional structures.

Engaging traditional leaders improves adaptation to context. The inclusion of traditional leadership and leadership structures in project planning and implementation assisted in adapting project interventions to existing cultural norms in communities, particularly around the Gender Champions initiative.

SILCs contribute to resilience. SILCs provide an important safety net for families in extreme poverty, a place to save money and build assets, a source of credit for productive investments, and a vehicle to aid recovery from shocks. They have been highly successful, especially for women. They require relatively few resources to implement and once established, can easily become self-sufficient. These groups should be supported and incorporated in future projects, with a provision to link their members to larger financial institutions.

Marketing groups need time to develop. Farmers understand the concept of marketing groups and are able to connect with buyers and negotiate prices. However, clubs need time to gain experience in collective marketing, become more effective, and eventually conclude binding contracts with buyers.

Linking seed multipliers to larger structures is important for sustainability. UBALE could have linked seed multipliers to NASFAM, which provides free seeds to farmers and would offer a more permanent market than selling to local buyers and NGOs. This could have strengthened the sustainability and increased the incomes of the seed-producing groups.

The focus on the first 1,000 days works. Implementation of a package of MCHN activities at scale based on best practice and lessons learned from previous projects—specifically targeting the first 1,000 days—can result in decreased rates of stunting in children, even when household food security is tenuous.

Care Groups get the message out. The Care Group model was an effective mechanism for developing peer networks to improve adoption of positive MCHN behaviors and practices. The Care Groups created a multiplier effect with interpersonal BCC on maternal and IYCF practices, including exclusive breastfeeding and complementary feeding. The GoM training materials were effective and the role of the health promoters was critical for quality training and support to Care Groups and linking to HSAs and the health system.

Working across sectors has a strong impact on nutrition. Linking agriculture with nutrition interventions maximized the intervention impact on key nutrition outcomes. UBALE promoted conservation agriculture, improved post-harvest handling, increased diet diversity, and promoted nutrition gardens among the Care Groups. The combined effect of all of these approaches resulted in a significant reduction in child stunting.

Further study is merited on the impacts of food rations during the lean season. JMTR recommendation U18 expressed concern about the effectiveness of the ration approach in UBALE, citing FFP studies indicating that in order to see to significant reductions in stunting, rations for PLW and CU2 are needed year-round, in addition to household rations during the lean season. Yet UBALE's quantitative results indicate a significant reduction in stunting in CU5—with lean-season rations alone. This finding is supported by qualitative findings that ration provision during the hungry season only, without the household ration, not only prevented spikes in acute malnutrition, but in conjunction with the package of Purpose 2 interventions year-round were sufficient to reduce stunting. Given this experience, further study is merited on the extent to which the lean season ration has potential for impact and contributed to project gains.

Youth should be involved in activities. UBALE activities had no clear agenda to support the needs of youth. Beyond disseminating messages and some public service activities, UBALE could have identified and developed off-farm income-earning opportunities that are important to their future. Few youth were motivated to join the youth clubs, as they did not see any benefits. This was a missed opportunity, especially as rain-fed farming becomes a less reliable livelihood due to climate change.

5. RECOMMENDATIONS

R1. Expand opportunities for market-based food security solutions. UBALE was able to form marketing groups and link them with private companies to increase farmers' income. There are large private buyers willing to work with small producers, and it is critical for future projects to find ways to incorporate private companies dedicated to buying and selling agriculture products into project work with smallholders. New, more market-based food security solutions need to be identified at local, district and national levels. These could include production of local seeds, OFSP, tree nurseries, etc. The private sector should be part of the sustainability strategy for generating village-level agricultural income. In addition, future programs should plan and invest in local storage facilities for aggregated crops to strengthen the value chain, attract potential buyers, and increase farmers' negotiating position.

R2. Root community assets in an integrated watershed management strategy. UBALE's experience working on asset creation demonstrates the need for community assets to be rooted in a sustainable strategy to manage watersheds. Just as sustainable farming and income generation should be central to the design of future programs, integrated watershed management should be included in strategic plans. This strategy should involve government officials, communities, and local experts in defining risks, action plans and support for watersheds.

R3. Use small irrigation schemes to build food security. A missed opportunity to increase crop yield and income of UBALE's small farmers was the promotion of small irrigation schemes. Small and medium irrigation schemes should be considered in new proposals to strengthen the ability of communities and farmers to mitigate and adapt to food security shocks and stresses. This is an example of where youth and entrepreneurship linkages can be made with private companies that can support and purchase locally produced food.

R4. Support innovative income generation opportunities for youth. UBALE supported the creation of youth groups to promote project activities and disseminate health, sanitation and gender equality messages. However, there was a missed opportunity to create and support innovative income-generation activities for youth that will build their business skills and increase income and health at the family level. Youth are keen to get involved in innovative and new ways of achieving food security. Both new agricultural and non-agricultural income generation opportunities need to be explored for youth, in particular, in order to provide them with viable and sustainable livelihoods. While Youth Clubs have received some support for income-generating activities, significant interest and potential for individual and group-based activities can be tapped into if youth see results from their efforts.

R5. Invest in livestock development where it is a major component of livelihood strategies. Livestock development is a livelihood and an opportunity in the UBALE districts. UBALE supported paravets to expand livestock health services in the target area but did not otherwise have a livestock management and development component despite its importance to the household economy, especially in Nsanje district. This was a missed opportunity. Crops and livestock are part of a sustainable, integrated system at the household level, where one enhances the productivity of the other. Livestock is a key element of the household economy in the short, medium, and long term; many family decisions are made based on their livestock situation or the ability to leverage resources based on markets and their capacity to

generate value-added products. In those areas where livestock is a main livelihood, future programs should understand how livestock fits into agricultural systems and consider not only animal health components but also farmers' organizations, markets, value-added activities and coping strategies to adapt to external shocks and stresses that affect livestock.

R6. Allow sufficient time to build new financial institutions. Based on UBALE's experience in supporting the establishment of a new SACCO, the formation of new local financial institutions in the future should start from the beginning of the project and be integrated into the sustainability strategy. This gives the necessary time for financial services to mature, attract a viable customer base, and achieve sustainability during the LOA.

R7. Build upon established and successful community health models and support government policies. Future health and nutrition components of food security programs in Malawi should continue to build on the successful community health model adopted in UBALE. The project implemented the GoM community strategy and training materials consistent with national policy and Scaling Up Nutrition efforts in the country and added effective community mobilization activities. In particular, mobilization of grandmother groups and CCFLS were important complementary activities.

R8. Ensure support and proper selection of volunteer health promoters. Health promoters in UBALE were role models and non-formal peer leaders from the community whose support was vital to CGVs implementing health activities and to linking communities to the health system. Their role was critical for group formation, training, and ongoing support for community-level activities. Future programs should provide an adequate budget to cover health promoter stipends for the initial few years of a program. In addition, the selection of promoters using national standards, inclusion of joint training for health promoters and HSAs, and support for joint supervision, will help foster partnership and integration of community and health outreach activities.

R9. Complement capacity building in water management with infrastructure provision. UBALE supported improved water management focused on training water committees. However, training alone will have limited impact if adequate WASH infrastructure is not in place and maintained. Infrastructure development and maintenance may be supported by FFA, government or other organizations. This could have been complemented with provision of water points (drilling and/or repairs to broken down facilities), for which there was widespread demand. There is a need for technologies that harness runoff excess water from the borehole for the benefit of animals in an environmentally friendly manner, especially in areas where livestock is an important element of farmers' livelihoods.

R10. Promotion of latrines should be coupled with consistent standards and implemented in phases. Community leaders are aware of the need to have latrines, but in many cases enforced the construction of these without a proper design. The promotion of latrines must be accompanied by the definition of minimum standards and training in their implementation. This could be accomplished using a two-stage approach. First, the household constructs an affordable structure, in line with its resources; second, they upgrade it to a more durable semi- permanent or permanent structure. Households could be presented with a range of options that meet standards but perhaps have incrementally higher levels of durability corresponding to increasing levels of investment. Many households would likely need economic support in the second stage; however, helping people build latrines to a higher standard would increase their durability and render them less prone to damage through disasters.

R11. Implement a results-based M&E system. Programs that aim to change social and behavioral practices need a results-based M&E system that goes beyond measuring outputs and activity targets. The data supporting successes and challenges needed to be better documented to understand which activities were working well and which were not meeting expectations, make evidence-based adjustments, mobilize resources, and support advocacy. Capturing key outcome indicators in annual surveys and closely monitoring participant coverage is an opportunity for NGO and government partners to periodically review achievements and progress and develop joint ownership of program efforts.

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ANNEX B: EVALUATION STATEMENT OF WORK

Statement of Work
Population-Based Final Evaluations of UBALE and Njira (Development Food Assistance Projects) in Malawi

Introduction

The final evaluation of the 2014 Malawi Title II Development Food Assistance Projects (DFAPs) is the second and final phase of a pre-post evaluation strategy. The baseline study conducted from July 27 to September 11, 2014, employed a mixed-method approach, and was designed to provide information on all four aspects of food security—availability, access, utilization and stability. The study investigated household food access, sanitation and hygiene, agriculture, household expenditures and assets, dietary diversity, and anthropometry among women and children. As with the baseline study, the Malawi final evaluations will use a mixed-method approach and integrate secondary data, and project performance monitoring data. Methods will be chosen to generate the highest quality and the most credible and robust evidence possible to answer evaluation questions.

Background

In fiscal year (FY) 2014, the U.S. Agency for International Development (USAID) Office of Food for Peace (FFP) awarded cooperative agreements to two development food assistance projects in Malawi. The Njira project is being implemented in 11 select traditional authorities in the Balaka and Machinga districts by Project Concern International (PCI) and its core implementing partner Emmanuel International (EI). The UBALE Project is being implemented by Catholic Relief Services (CRS), in consortium with CARE, Chikwawa Diocese, National Cooperative Business Association (NCBA) CLUSA, the National Smallholder Farmers' Association of Malawi (NASFAM), and Save the Children in the entire districts of rural Blantyre, Chikwawa, and Nsanje.

The goal of the Njira Project, which means "way of achieving something" in Chichewa, is to empower beneficiaries to better access the wide variety of resources that are necessary for lasting food security by using tailored pathways to build on assets, based on sound evidence of what works. These pathways will be adjusted over time through continual learning. The Njira Project strives to avoid compartmentalization by technical sector or intervention area and to ensure a more integrated project that delivers impact.

The goal of the UBALE Project, which means "partnership" in Chichewa, is to work through government, community, and private-sector systems and structures to implement a comprehensive program to reduce chronic malnutrition and food insecurity and to build resilience among vulnerable populations in three of the most food-insecure, chronically malnourished, and disaster-prone districts in the Southern Region of Malawi. The UBALE Project theory of change sees sustainable livelihoods and good health as mutually reinforcing preconditions for emerging from poverty and building resilience. The effort will be underpinned through the support of government and community systems and structures and the empowerment of women and girls. The project sequences, layers and integrates carefully selected interventions based on wealth group, health status and livelihoods zone.

Evaluation Purpose & Questions

The overarching purpose of the final evaluation is to measure the development outcomes of the UBALE and Njira projects. The statement of work provides a list of illustrative evaluation questions bellow and the fundamental elements that should shape the Evaluation Team's (ET) ***research.***

Q1: To what extent have the projects met their defined goals, purposes and outcomes?

The ET will evaluate the contribution of UBALE and Njira to USAID's efforts to *reduce food insecurity among chronically food insecure households*. The ET will support its determination using both quantitative and qualitative methods when discussing the following: (1) project performance on indicators against targets set by both the partners and the key FFP indicators[31] of Depth of Poverty, Stunting, and Undernutrition. The report will be designed based on the theory of change of the project and using empirical evidence to assess the progress or non-progress along the hypothesized pathways of change. The report will describe the key assumptions and how the project adapted or did not adapt to the contextual changes over the past five years; (2) factors that promoted or inhibited the achievement of the project objectives, including, but not limited to the effectiveness of food-for-asset and/or cash-for-asset interventions; (3) plausibility of pathways and the determinants of achieving the key outcomes; (4) targeting strategies and their contribution to achieving project goals (especially with regard to gender and reaching the most vulnerable); and (5) the appropriateness and effectiveness of interventions on the poorest individuals.

Q2: Based on the evidence, which project outcomes are likely to be sustained?

The ET will evaluate the functionality of the institutions and systems established or strengthened by the projects independently or in collaboration with the private sector, Government of Malawi, community organizations, NGOs, and research organizations to achieve project outcomes and sustainability. It will support its evaluation using both quantitative and qualitative methods that explore the following: (1) the functionality and effectiveness of the systems, and institutional arrangements developed and/or strengthened to sustain the necessary and critical services; (2) coverage of project promoted practices and secondary adoption, (3) communities' perceptions on the quality, frequency, effectiveness, and sustainability of the services provided by the project; (4) based on the empirical evidence the likelihood that service providers will continue providing services after the project ends; (5) the motivation of the community and beneficiaries to demand and pay (or invest time) for the services; (6) whether the necessary resources and capacity strengthening will exist to sustain service providers; (6) the extent to which the projects leveraged other USG and non USG investments to achieve sustained outcomes as identified in the theories of change; (7) evidence of enhanced linkages with other service providers.

Q3: In each technical sector, what are the strengths of and challenges to the efficiency and effectiveness of the interventions' implementation and their acceptance in the target communities?

The ET will evaluate the effectiveness and relevance of the technical interventions, including food-for-asset and/or cash-for-asset interventions, to achieve project outcomes, and discuss those findings in relation to the projects' theories of change. It will support its determination using both quantitative and qualitative methods when discussing the following: (1) factors in the implementation and context

[31] *FFP's established targets are: a minimum of 2 to 2.5 percentage point annual reduction of prevalence of stunting, a minimum of 3 to 4 percentage point annual reduction of prevalence of underweight, and a minimum of 4 percentage point annual reduction of depth-of-poverty.*

associated with greater or lesser efficiency and effectiveness in producing Outputs of higher or lower quality; (2) the interventions and implementation processes deemed more/less acceptable to members of the target communities.

Q4: What key lessons learned, and best practices should inform future projects in the country?

During the course of its research, the ET should identify best practices, strengths, and challenges in the design (including theories of change) of UBALE and Njira, adaptation of design and implementation based on the findings from the monitoring, strategies to promote secondary adoption and approaches that could be considered in designing future food and nutrition security projects. The ET will use both quantitative and qualitative methods to answer the questions and discuss the following: (1) the unintended positive and/or negative consequences of the projects, and (2) ways to minimize potential unintended negative consequences and systematically capture positive consequences.

Audience & Intended Uses

The primary audience of the evaluation reports are CRS and PCI (and their sub partners). USAID (FFP/Washington, USAID/Malawi) will also learn from the evaluations. The reports will also be shared with the relevant departments of the Government of Malawi. Findings from the final evaluation will be used to determine the performance of the two DFAPs; and inform and shape future food security projects. It is expected that all stakeholders will make extensive use of findings from the evaluations to make different presentations and bulletins as part of a wider dissemination of best practices and lessons learned. The evaluation recommendations may be used by the future applicants to design projects, to USAID to refine proposal guidelines, project policy.

Final Evaluation Methodology

The final evaluation will use a mixed-methods approach, and the recommendations developed should be utilization focused. The ET will begin with a desk review of project documents, validate its understanding of the projects via consultations with CNFA, WV and their partners and FFP, conduct a population-based household survey using all implementation villages as the sampling frame, and conduct qualitative research in villages selected via non-probability sampling method. It is preferred that, if possible, the firm conducts quantitative and qualitative components sequentially to allow the quantitative data to inform the qualitative research.

a) Desk Review

The evaluation team should review the following documents to contextualize and refine the evaluation questions, as well as to gain an in-depth understanding about the project design, implementation, and the food security situation in the area. The ET is expected to review UBALE and Njira's annual monitoring data, MVAC data, mid-term evaluation reports, assessments conducted by the projects, and field visit reports when preparing for qualitative research. While FFP recommends the below documents for pre-evaluation learning, the literature review should not be limited to the following:

- Project proposals
- Pipeline Resource Estimate Proposals (PREPs)
- Annual results reports (ARR), including Indicator Final Tracking Tables (IPTT) for final against targets

- Midterm evaluation reports and corresponding action plans developed by the two projects
- Baseline Study of the Title II Development Food Assistance Projects in Malawi, 2015
- Malawi Demographic Health Survey 2015 – 2016.
- Partner formative research and barrier analyses to better understand the context and if/how the studies influenced programming
- Monitoring data and reports
- MVAC reports

b) Consultations

As a supplement to the desk review, consultations with CRS, PCI, and their partners, FFP staff in Washington, DC and USAID Malawi Mission staff will allow the ET to corroborate its understanding of the design, approaches and interventions employed by each DFAP and acquired through the desk review. It is recommended that the ET engage with the staff at each organization prior to beginning fieldwork. Equally important to engaging pre-data collection is to reconnect post-data collection to "ground truth" findings with FFP/Malawi and the partner staff. In the case of major disagreements, the program staff should provide evidence in support of the argument, and pending time constraints, the ET may revisit the field.

c) Quantitative Endline Survey

The 2019 PBS will collect data on the same population-level impact and outcome indicators that were collected during the 2015 baseline survey. DFAP baseline data were collected between late July and May. The endline data collection timing must match with the baseline. The 2019 PBS should use the same data collection instruments for the endline indicators, level of statistical precision (95 percent confidence intervals), and statistical power (80 percent) as the baseline study (ICF International, 2017).[32] The 2019 PBS design does not need to be identical to the baseline; if the projects reduced their target areas, for example, the sampling frame of households used for the baseline may need to be adjusted.

Note: A few additional questions may be incorporated into the household questionnaire based on the interest from the implementing agencies.

All quantitative data must be made available to the public barring rare exceptions.

d) Qualitative Research

Qualitative methods will be used to collect information to answer evaluation questions and to support the interpretation of the quantitative data. The ET will design the overall qualitative study approach and should consider a variety of primary data collection methods, such as semi-structured in-depth interviews, group discussions, key informant interviews, direct observations, and case studies (the ET may choose to use the most significant change methodology to identify a selective set of case studies). These methods - to the maximum extent possible - will ensure that if a different, well-qualified evaluator were to undertake the same evaluation, he or she would arrive at the same or similar findings and conclusions. The ET should decide on specific methods before traveling to Malawi and include them in the evaluation protocol with the number of interviews, FGDs, etc., per project, in the inception report.

[32] For the list of indicators, please see the Baseline Study of the Title II Development Food Assistance Projects in Malawi (ICF International, 2017).

Following discussion and agreement, the ET will finalize the methods during the team meeting in-country. The evaluation team leader and members will be responsible for interviewing the direct, indirect and non-participants in their households and communities, as well as look for evidence of ongoing learning and activities (such as home gardens, etc.). The ET will also be responsible for interviewing relevant stakeholders for the evaluation and analyzing the qualitative data. Should the ET decide to hire additional researchers to complement the data collection effort, they cannot replace the evaluation team members' role of collecting primary data using qualitative methods.

The ET will contribute to the interpretation of the quantitative results using qualitative findings. In addition to the factors specifically identified earlier as essential to responding to the evaluation questions, during the qualitative study, the ET should also consider the efficacy of the following cross-cutting interests: project management; final monitoring; strategies to improve gender equality at the participant and project management levels; environmental considerations; and conflict sensitivity. Lastly, it is expected that the evaluation will speak to lessons learned and best practices.

The ET may find it useful to apply non-probability sampling methods to select a sub set of enumeration areas from the PBS. In selecting interview sites, the evaluation team should strategically select large-enough-yet-manageable interview sites that generally represent the target area.

As with the PBS, qualitative sampling should include both individuals who directly participated in the DFAP (participants) and those not specifically targeted with any intervention (indirect/non-participants). (The latter should be included to allow learning on spillover, triangulate the information provided by the direct participants, and to understand their perspectives on the achievements or limitations of the interventions offered by UBALE and Njira. In addition, the qualitative team should interview USAID personnel, project staff, knowledgeable people from the community, local government staff, community leaders, host Government officials, and other agencies and individuals as appropriate.

e) Data Analysis and Interpretation

The ET will use inferential statistics to compare the endline data for each of the two strata with that of the baseline for that stratum, and also for the overall country level, in order to detect changes (if any) for all key indicators. The ET will conduct descriptive and inferential analyses to describe the results and whether there is a change between the two time periods, as well as various econometric analyses to predict determinants of key outcomes and the potential magnitude and direction of changes. In advance of fieldwork, the evaluation team needs to develop a data analysis plan. When analyzing the data, however, the ET should not limit itself to the data analysis plan; rather, the ET should keep an open and curious mind to look for correlations between variables.

In presenting the analysis, the ET needs to be cognizant about the readers' familiarity with the statistical presentation. FFP suggests avoiding jargons, but rather describe the statistical terms in a common language.

Interpreting the results is as critical as the analysis. Oftentimes, it can be difficult for a reader to fully understand the key points and utility of the findings conveyed in a report. The analysis and interpretation should be presented in a "story telling format" so that the readers can see a human face and a progression along the pathways of change as they read the report. While it is important for the reader to understand whether level of stunting is reduced in the area, it is equally important to

understand the pathway; for example, how learning derived from project participation influenced people's practices, which in turn resulted in positive changes in food security outcomes at the household and/or community level. Similarly, it is equally important for the readers to know some of the challenges participants faced that might have prevented them from reaping the full benefits of the projects.

Report

The ET will produce two reports in English, not to exceed 50-pages, for each DFAP. The draft reports will be shared with the stakeholders (i.e. CRS, PCI, FFP, and USAID/Malawi) for review and comment over a two-week period.

The final report should include a table of contents, table of figures (as appropriate), acronyms, executive summary, introduction, purpose of the evaluation, research design and methodology, limitations, findings, conclusions, lessons learned, and recommendations.

All evaluation questions should be answered, and the evaluation methodology should be explained in detail. To ensure a high quality deliverable, the reports should reflect a thoughtful, well-researched and well-organized effort to objectively evaluate what worked in the project, what did not, and why. Where noteworthy, the discussion should highlight and discuss the outcomes and impacts on males versus females. The report must integrate the quantitative analysis from the PBS with the findings from the qualitative inquiry. While the quantitative data will be used to evaluate the theory of change of the projects, learning from the qualitative research will help to contextualize and interpret the quantitative data. The report should be drafted based on the theory of change to tell the stories. The ET can use test of difference of the relevant indicators in combination with multivariate regression results and qualitative inquiries to tell the story. The report should discuss the major assumptions made by UBALE and Njira at the beginning of the project and how they changed (if at all) overtime. How the project design and or implementation were adapted to the change in context. The ET should also draw from partners' annual monitoring data, where appropriate, to substantiate findings. The report should include a section on resilience capacities.

Findings should be specific, concise, and supported by strong quantitative and/or qualitative evidence, and presented as analyzed facts/evidence/data, and not be based on anecdotes, hearsay or a compilation of people's opinions. It should include analytical methods to include appropriate tests of differences; econometric analysis to evaluate the theories of change and to explore the causal relation between the outcome and activities/variables based on the theoretical models; it is expected that the contractor will interpret the analytical findings.

The report should disclose limitations to the evaluation, with an attention to the limitations associated with the evaluation methodology, e.g. selection bias, recall bias, unobservable differences between comparator groups, etc. Recommendations should be supported by a specific set of findings, and be action-oriented, practical, and specific.

It is expected that the final reports will address and incorporate feedback, as appropriate, from the reviewers. Should the ET disagree with any of the comments, it should raise this with the AOR immediately for discussion.

Evaluation Team

The Evaluation Team Leaders will be responsible for designing and managing the evaluations and overseeing the work of the evaluation team members; coordinating with CRS, PCI and their sub partners, FFP and the USAID Mission and other stakeholders; coordinating with the endline PBS team; analyzing the findings and ensuring the quality of the report. As this is a mixed-method final evaluation, in addition to the evaluation team, the endline survey will require extensive participation of the following personnel: Survey Method Specialist, Data Analyst, Survey Coordinator, Anthropometry Specialist, and Survey Monitors. The PBS data collection team should be hired locally, if possible. The evaluation team will collect primary data using qualitative methods by themselves. As the two projects are multi-sectoral, the evaluation team must possess expertise and field experience with food security and multi-sectoral nutrition programming, and demonstrate an in-depth knowledge of the following technical sectors and cross-cutting areas: agriculture and off farm livelihoods, nutrition; water, sanitation, and hygiene (WASH); gender, youth, resilience, and disaster risk management.

The subject matter specialists must also possess experience and knowledge about the specific *processes* used by the projects (e.g., Care Groups, Farmer Field Schools, etc.)

Field Logistics

The ET is responsible to arrange and pay for all logistics, and transportation. FFP has the anthropometric equipment and tablets (i.e., height board, and scales) that the ET will use. CRS, PCI and the USAID Malawi Mission may be consulted on identifying interpretation services and transportation services. The ET should request assistance from CRS, PCI and their sub partners on making introductions, as necessary, to local ministry representatives and community leaders.

Deliverables

The ET shall produce the following deliverables during the evaluation and submit to the Agreement Officer's Representative (AOR) for the associate award for review. All draft documents should be submitted in Microsoft Word or Microsoft Excel, or in the rare occasion both PDF and Word/Excel. The AOR must approve all deliverables.

Work Plan • Includes a brief synthesis and timeline for the Malawi final evaluations, with the timeline including major activities throughout the study, including dates by which field guides and training materials will be completed. *Only one work plan detailing both baseline study and final evaluation activities is required*
Monitoring Plan • Includes strategies and methods that the awardee will use to monitor the field work. It should provide the timeline, benchmarks, and strategies. It should also offer the feedback loop. *Only one monitoring plan detailing both baseline study and final evaluation activities is required*
PBS Enumerator Guide, Supervisor Manual, and Anthropometry Guide*

- Provide revised detailed instructions on supervisor, enumerator and anthropometry trainings. Note that the PBS should use the supervisor, enumerator and anthropometry training guides developed for the baseline. Minor adjustments will be needed to accommodate the new indicators.

Only one set of guides that serves both the baseline and endline surveys is required

PBS Data Treatment and Analysis Plan

- Details how the data will be cleaned, weighted, and analyzed and must include: programming specifications and editing rules for cleaning data, data dictionary codebook, SPSS syntax or Stata do files and output for all analyses and variable transformations into indicators; and
- Includes a descriptive, inferential, and econometric analyses plan.

Only one DTAP that serves both the baseline study and final evaluation is required, but it must clearly differentiate between the different analytical approaches used for each.

PE Inception Report and Protocol (~20 pages for each)

- Briefly synthesizes the literature review;
- Describes the qualitative evaluation methods (including evaluation questions *contextualized based on the literature review*, sample site selection strategy and number of sites to be selected, number of interviews/discussions per project, types of interviewees)
- Introduces the evaluation team members and their roles; and
- Details how the qualitative information will be analyzed and integrated with quantitative.
- Present specific data collection methods by evaluation question;
- Identifies indicators to be collected;
- Discusses the quantitative and qualitative analysis methods and plan;
- Presents PBS sample size, design and plan, survey design, questionnaire design, site selection plan for qualitative research; and
- Presents the fieldwork plan (including trainings and field support/supervision, data management, quality control, recording, analysis and reporting).

Pertinent Permissions and approvals

- Demonstrate official approval from all relevant institutional review boards and from host country institutions to collect data, conduct the evaluation, and release data and reports, as required, as well as a statement affirming adherence to all requirements specified in USAID's Scientific Research Policy.

PBS Quantitative Survey *and* Qualitative Instruments

- Include both English, Shona and Ndebele versions of the household survey (*note: if any new questions are added to the instrument the awardee must back-translate the questions to English via a second translator to ensure accurate translation. The newly added question should be highlighted for easy reference. Following the pilot of the survey, any modifications based on field experience will again require translation and back translation to ensure accuracy).*
- Describe site selection methodology and factors used to select

In-country briefings to CRS and PCI and their partners, USAID/Malawi and other stakeholders

- Two 60-minute presentations of the major findings of the evaluation to provide an opportunity for immediate stakeholder feedback that can be considered for the revision (as appropriate and without compromising the validity or independence of the evaluation).
- One presentation to USAID/Malawi;
- One presentation to stakeholders in Malawi, including the DFAP partners, donors, and Government of Malawi,

Final Evaluation Reports

- Include items identified in the draft report as well as a three- to five-page executive summary of the purpose, background of the project, methods, findings, conclusions and recommendations, and the following annexes: the scope of work, tools used in conducting the evaluation (questionnaires, checklists, and discussion guides), and any substantially dissenting views by any Team member, USAID or the PVOs on any of the findings or recommendations; and
- Must be 508 compliant and uploaded to the Development Clearinghouse following AOR approval.

Briefer (~ 5 page each)

- The ET will produce a 5 page briefer—one for UBALE and one for Njira that provides the highlights of the key findings, lessons learned and key recommendations.

(to be submitted at the time of the final report*)

- Include a separate electronic file of all quantitative data in an easily readable format that is organized and fully documented so as to facilitate use by those not fully familiar with the project or the evaluation;
- Provides cleaned data, sampling weights at each stage, final sampling weights, and all derived indicators;
- Includes a second final data set in CSV format that has been anonymized to protect individual confidentiality for use as a public data file in the USAID Open Data; and
- Include a separate file detailing GPS coordinates of households that participated in the PBS.

**FFP may request data sets earlier for internal use only*

ANNEX C: PRIMARY EVALUATION QUESTIONS AND METHODS

Criteria	Main evaluation questions	Sub-questions	Evaluation method
Impact	1. To what extent did the programs achieve the intended goal, objectives and results as defined by their Results Framework? 2. How did program activities improve the ability of beneficiary households and communities able to mitigate, adapt to, and recover from food security shocks and stresses?	1.1 Were there any important unintended outcomes, either positive or negative? 1.2 What were the main reasons that determined whether intended outcomes were or were not achieved, and whether there were positive or negative unintended outcomes? Which reasons were under control of the programs and which were not?	1. Quantitative bi-variate analysis 2. Quantitative and qualitative
Beneficiary satisfaction	3. How satisfied were beneficiaries with the programs?	3.1 What issues were most important to beneficiaries forming their perceptions of the programs? What were the key successes and challenges of the programs?	Qualitative
Relevance	4. How relevant was beneficiary targeting, considering the needs of the target population?	4.1 Were beneficiary targeting criteria and processes appropriate, transparent, and properly implemented? 4.2 Were the scale, type, and timing of the program activities appropriate to the needs of the target population?	Qualitative
Effectiveness	5. How well were program activities planned and implemented?	5.1. What were the main factors that contributed to whether activities resulted in intended outputs and outcomes?	Quantitative and qualitative

Criteria	Main evaluation questions	Sub-questions	Evaluation method
		5.2. What quality standards were defined? How did the programs develop those standards?	
Coordination	6. To what extent did the programs coordinate with other food security and humanitarian programming, the host country government, and the donor?		Qualitative
Sustainability and Replicability	7. How sustainable are the programs' outcomes?	7.1. What exit strategies were incorporated into program design? Were such strategies implemented, how were they perceived by the beneficiary population, and what were the strengths and weaknesses of the exit strategies adopted?	Qualitative
Cross-cutting issues	8. How well were gender and environmental considerations integrated into program design and implementation?	8.1. Were they successful in meeting their stated objectives? How?	Quantitative and qualitative
Lessons Learned	9. What lessons can be learned future FFP and USAID Title II in Malawi?		Quantitative and qualitative

ANNEX D: TRAINING, DATA COLLECTION, AND QUALITY ASSURANCE

Training

TANGO organized and led enumerator training in preparation for the Njira and UBALE endline quantitative survey. The training took place from July 8 to July 20, 2019. It was led by two TANGO consultants with assistance from CARD. The Njira team included a Survey Director, Survey Coordinator, and two PBS specialists. An independent Anthropometry Specialist led the anthropometry training and three anthropometry supervisors led a dedicated team of 15 anthropometry enumerators. Table 4 shows the number of different personnel employed in the training and data collection phases, by personnel category.

Table 4: Personnel employed for Malawi quantitative survey training and data collection

	# listers	# lister supervisors	# enumerators, HH survey	# enumerators, anthropometry	# team leaders
Training	32	13	60	15	15
Data collection	32	13	60	15	15

Household survey enumerator training

A team of 60 household survey enumerators and 15 field team leaders participated in the 11-day training. The training covered: study objectives and sampling methodology, human subjects research, interview norms, and survey implementation guidance. It also included a thorough review of the household survey instrument, instruction how to conduct household listing, and the use of tablets and data collection through Open Data Kit (ODK). During the course of the training, enumerators and field team leaders practiced administering the household survey, using both paper and tablet versions in order to familiarize themselves with different scenarios they could encounter in the field. Throughout the course of the training, participants maintained a list of questions and issues to review with TANGO.

Listing enumerator training

The listers and lister supervisors attended the first two days of the household enumerator training (July 8-9, 2019) for overall orientation. The second day of training for the listers included a field test. On the third day, the listing group split away to travel to sites included as part of the listing exercise, that began on July 11. The listing team comprised 40 listers and 13 lister supervisors.

The listers received training on the listing survey and on developing sketch maps for use by the household survey enumerators. An exercise was developed to encourage listers and household enumerators to develop and interpret sketch maps, using the local venue as an example. This ensured that enumerators and listers had a good understanding of how the data collected by the two individual surveys (household and listing) were linked and how enumerators' work contributed to their peers' work.

The lister supervisors were trained on processing listing surveys, overseeing the listing data collection, and quality control checks. The training reviewed protocol to introduce the project to the local leadership, as the listing teams were the first point of contact between survey teams, households and communities.

Anthropometry enumerator training

A team of 15 anthropometry enumerators also participated for 11 days (July 10-20, 2019) in parallel anthropometric training sessions beginning from the third day of training alongside the household enumerators. Training included sessions on i) measurement procedures for women and children on stunting and underweight indicators; ii) introduction to using tablets and data collection with ODK; and iii) anthropometry quality control measures to be covered with field team leaders.

CARD invited women and children to participate as volunteers for the anthropometry training. Household survey enumerators assisted the anthropometry enumerators by positioning children so that they could be measured correctly. The Anthropometry Specialist instructed enumerators on how to avoid recording errors when measuring women's height and weight and children's standing or recumbent height and weight.

Supervisor training

In addition to the 11-day training, field team leaders participated in a one-day supervisor training that covered roles and responsibilities of supervisors and the fieldwork work plan. The training was led by the TANGO team; participants were the CARD personnel (Survey Director, Study Coordinator, and PBS Quality Controllers), Independent Survey Monitor, and Anthropometry Specialist. The TANGO team discussed responsibilities for each type of supervisor to ensure role clarity and optimal quality control over the data collection process and data management. This was necessary given the layered approach to supervision that was established for data collection: CARD team members, independent consultants, and field team leaders each had specific roles to play. The team of 15 field team leaders, responsible for directly managing survey and anthropometry enumerators, were trained on the necessary procedures to follow when arriving at a cluster (EA), including communication with local leadership, the identification of households, and the assigning of households to enumerators.

All supervisors were instructed on procedures for data quality control and troubleshooting through the use of control sheets, spot checks, and re-check processes. Field team leaders were instructed on monitoring household survey and anthropometry enumerators' data collection closely, on verifying questionnaire completeness, and on data management. This included creating backup copies of data, data archiving, and transferring complete and verified questionnaires to the TANGO server.

Training location and pre-testing

All trainings took place in Blantyre. During the course of the training, the household survey enumerators, anthropometry enumerators, and field team leaders had the opportunity to role-play data collection measures with volunteer members of the public who CARD invited to the training. This was done so they could practice introductions, gather practice survey data and enter it into tablets, and ensure coordination among data collectors.

A field pre-test was organized on July 18, near the end of the training. It was conducted in a rural community within the boundaries of the projects but outside the sample, so teams could have the opportunity to gather information in an environment that closely resembled the area where actual data collection would take place. The pre-test allowed the enumerators and field team leaders to practice the procedures to follow when arriving in each EA. Household enumerators were asked to complete one household survey, and anthropometry enumerators were asked to measure at least one child and one woman. Field team leaders supervised each enumerator during a portion of their interview and provided feedback on the conduct of the interview. In addition to serving as a practice for the enumerators and a test of the survey tool, the pre-test allowed enumerators to practice coordinating the logistics of household interviews and anthropometric measurements. It also served as a test of the anthropometric equipment, and was helpful to understand the time needed to complete the survey, measurements, and data quality procedures.

The last two days of training for household survey and anthropometry enumerators were reserved for reviewing obstacles faced during the pre-test, reviewing definitions and terms in the local language, and discussing issues that needed further clarity.

Translation and back-translation

Following the baseline survey procedure, the household survey questions were translated and entered into ODK in Chichewa. The translation and back-translation of the household survey questionnaire were done by enumerators hired by CARD. A translator back-translated the household survey from the local language to English to ensure accuracy. The anthropometry and listing surveys were in English. The translation process was monitored by the TANGO team and closely verified by the Independent Survey Monitor to ensure accuracy.

Household survey enumerators spent time during the training role-playing in English/Chichewa with other enumerators and with the invited volunteers. Anthropometry enumerators also practiced in local languages with women and child volunteers throughout their training.

Field procedure manuals for enumerators and supervisors

TANGO produced a series of manuals to guide and support the teams throughout the data collection process. The manual for field team leaders includes:

- Information on household and anthropometry surveys, including explanations for every question and instructions;
- Terminology on agriculture, WASH practices, and food security;
- Description of the anthropometry survey and measurement that was covered during training;
- Instructions for operating tablets, understanding ODK, and uploading data to the TANGO server; and
- Quality control sheets for leaders to conduct checks on enumerators' work.

The household survey manual and anthropometry manual focus on detailed explanations of questions from each survey and on working with ODK.

The anthropometry manual describes procedures adapted from the DHS biomarker manual for all DHS surveys worldwide. Reinforcing information from the training, it also includes enumerator instructions for cases where a child is suffering from wasting or exhibiting bilateral pitted edema.

Survey programming

TANGO staff converted the baseline survey questionnaire to an Excel version that was readable by ODK software. This included typing out more than 1,250 rows in Excel and adding columns for two languages (English and Chichewa), with codes for skip patterns and constraints that would allow the survey logic to run appropriately. Prior to the team's departure for fieldwork, TANGO performed a final check and the Independent Survey Monitor also did a quality control check to verify the ODK logic in both languages before finalizing the household survey on July 20. The programming of the listing survey and the anthropometry survey were also done using the questions from the baseline surveys; a similar process was followed for ODK programming.

Listing

Listing began on July 11 while household and anthropometry survey trainings continued in Blantyre. CARD obtained detailed boundary maps for each sampled EA from the Malawi National Statistics Office, which included household counts from the 2018 census.

Lister enumerators used these maps to develop sketch maps, which included the official EA borders and sketches of infrastructure, forests, bridges, and any other natural and physical key points that would help the household and anthropometry teams locate sampled households. The listing team included a mapper and a lister working together to collect listing data and develop the maps. Listing supervisors traveled with the teams, introduced teams to village leaders, and followed all procedures, including quality control checks.

Each lister team recorded GPS coordinates at the center of the EA they listed. Each listing team gathered household-identifying information from each dwelling in the EA, including the name of the head of household. The teams worked closely with their supervisors to avoid duplications and missing households.

The listing data were uploaded to the TANGO server, where the TANGO team verified them for completeness and accuracy. The Survey Director at TANGO conducted the sampling of households (described in Section 3.1 of main report). The selected households were provided to the Independent Survey Monitor in Blantyre, who distributed lists of households by EA to field team leaders. The field team leaders used these lists to assign households to individual household survey and anthropometry enumerators.

Household survey and anthropometric data collection

The household survey enumerators collected data from their assigned households and worked in coordination with the anthropometry enumerators to ensure that the criteria for measuring children and women were applied. In the rare cases where household survey enumerators finished their interview and moved to another household before the anthropometry enumerators arrived (sometimes they were delayed at the previous household because they had to measure multiple individuals), the teams communicated with each other on which children and women needed to be measured. The field

team leader, anthropometry enumerators, and household survey enumerators debriefed at the end of each data collection day to plan the logistics for the next day and allow the leader to perform quality control checks.

Quality assurance

The field team leaders provided the first level of quality control by implementing spot checks and directly observing enumerators. The Survey Director, Survey Coordinator, PBS Quality Controllers, and two independent consultants provided quality oversight to the teams in the field. The TANGO team monitored data uploaded to the TANGO secure server and provided feedback to the teams. This process ensured questionnaires were reviewed daily for completeness and accuracy. In the analysis stage, data were cleaned using STATA statistical software; identifying information was removed from the final dataset.

ANNEX E: DATA SOURCES: INTERVIEWS, FOCUS GROUPS, AND ASSET OBSERVATIONS

Table 5: Summary of Interviews Conducted

Type of Respondent	# of Interviews
Key informant interviews (KIIs)	
UBALE staff (CRS and partners, Save the Children, CADECOM, CARE)	37
Staff from district councils	30
USAID staff	5
Private sector	1
Total KIIs	**73**
In-depth interviews (IDIs)	
Program participants	24
Total in-depth interviews	**24**

Table 6: Summary of Focus Groups Conducted

Type of Respondent	# of Focus Groups
Members of care groups and health promoters	10
Water point committees	9
Women user of water points	4
Marketing, SILC	2
PSP SILC	1
SILC group	3
Farmers and extension agents	7
Community committee board members and gender champions (Village Area committee (VAC), VCPC, VNRM, village chiefs)	11
SILC Village savings committee	1
Youth Club	3
Total	**51**

Table 7: Key Informant Interviews Details

**We have kept the names of CRS and USAID staff interviewed, but removed those of other respondents to protect confidentiality.*

Name	M	F	Title/position	Date of KII
CRS				
Dane Fredenburg	1		UBALE Chief of Party	28-Oct
David Munthali	1		Smart Skills Specialist/PMU	28-Oct
Jenny Haddle		1	Meal Manager/PMU	28-Oct
Julie Ideh		1	Country Director	28-Oct
Juma Masumba	1		Agriculture Livelihoods/PMU	28-Oct
Mary Mpinda		1	Former MCHN Technical Integration Lead	30-Oct
Micter Chaola	1		Former Climate Smart Agriculture Specialist	30-Oct
UBALE				
--	1		PSP Marketing	8-Nov
--	1		PSP SILC	8-Nov
--	1		Lead Farmer	5-Nov
--	1		Village Headman	1-Nov
USAID				
Achangel Chinkunda	1		M&E Specialist	28-Oct
Emmanuel Ngulube	1		Food for Peace Officer	28-Oct
Kilian Mutiro	1		M&E Specialist	28-Oct
Lori Du Trieuille		1	FFP Team Leader	28-Oct
Steve Sibande	1		Food Security Monitoring Specialist	28-Oct
Implementing Partners				
--	1		Senior Meal Manager	29-Oct
--	1		Food & Nutrition security / Climate Change Specialist	29-Oct
--	1		Deputy COC	29-Oct
--	1		Former Smart Skills Facilitator	31-Oct
--	1		Blantyre Manager	31-Oct
--	1		DRR and Resilience Coordinator	31-Oct
--	1		Former Meal Coordinator	31-Oct
--	1		Former Project Manager	31-Oct
--	1		FFA Coordinator	7-Nov
--	1		Agriculture Coordinator	7-Nov
--	1		M&E	7-Nov
--		1	Program Manager	7-Nov
--	1		M&E	4-Nov
--	1		CADECOM Secretary	4-Nov
Blantyre District Council				
--		1	Development District Community Officer	31-Oct
--	1		Crops Officer – DADO Office	31-Oct
--	1		Social Welfare	31-Oct

Name	M	F	Title/position	Date of KII
--		1	District Agriculture Development Officer (DADO)	31-Oct
--	1		Director of Planning and Development	31-Oct
Blantyre District Health Office				
--	1		District Nutrition Coordinator	11-Nov
Blantyre Rural District Office				
--		1	District Agriculture Extension Officer	1-Nov
Nsanje District Office				
--		1	District Community Development Officer	7-Nov
--	1		Forestry Officer, Department of Forestry	7-Nov
--	1		Assistant District Agriculture Development Officer (DADO)	7-Nov
Nsanje District Health Office				
--	1		Youth Friendly Services Officer	7-Nov
--		1	District Medical Officer	7-Nov
--	1		District Environmental Health Officer	7-Nov
--	1		Nutrition Coordinator	7-Nov
Nsanje District Water Office				
--	1		Water Quality Monitoring Assistant	7-Nov
--	1		Water Officer	7-Nov
District Agriculture Office				
'--	1		Agriculture Extension Development Officer	8-Nov
Chikwawa District Office				
--	1		Agriculture Extension Development Coordinator	6-Nov
--	1		Agriculture Extension Development Officer	5-Nov
--	1		Assistant District Animal Health and Livestock Development Officer	4-Nov
--	1		Agriculture Gender Officer	4-Nov
--	1		District Agriculture Development Officer (DADO)	4-Nov
Chikwawa District Hospital				
--		1	MCH Coordinator	4-Nov
--		1	Chief Preventive Health Officer	4-Nov
--	1		District Environmental Health (Officer) (DEHO	4-Nov
Chikwawa District Health Office				
--	1		District Nutrition Coordinator	4-Nov
--	1		District Medical Officer	4-Nov
--		1	Deputy District Nutrition Officer	4-Nov
Chikwawa Water Department				
--	1		Water Quality Monitoring Assistant	4-Nov
BNC SACCO				
--	1		Board Chairperson	4-Nov
--	1		Chief Executive Officer	4-Nov

Name	M	F	Title/position	Date of KII
--	1		Board member	4-Nov
--		1	Credit Committee	4-Nov
--	1		Credit Committee	4-Nov
--	1		Board Chair, Mkombedzi Cooperative	4-Nov
--	1		Accountant	4-Nov
--		1	Cashier	4-Nov
Other				
--	1		General Manager	11-Nov
--	1		Area Development Council Chair	8-Nov
--		1	Microfinance Specialist	30-Oct
--	1		Field Officer	12-Nov
--	1		NASFAM lead for UBALE	14-Nov
--	1		Coordinator of Projects, NASFAM	14-Nov
Total	***57***	***16***		

Table 8: Focus Group Discussions Detail

District	TA	Village	GVH	Activity	M	F	Total	Date
Blantyre	Kapeni	Kuponda	Nazombe	Farmers	10	0	10	1-Nov
Blantyre	Kapeni	Kuponda	Nazombe	SILC group	0	10	10	1-Nov
Blantyre	Kapeni	Mpira	Kuponda	Farmers	13	6	19	1-Nov
Blantyre	Kuntaja	Chiyala	Mazongoza	Water Point Committee	2	6	8	1-Nov
Blantyre	Kuntaja	Mazongoza	Mazongoza	Water Point Committee	5	3	8	1-Nov
Blantyre	Kuntaja	Mtiza	Mazongos	MCHN Women	11	0	11	1-Nov
Blantyre	Kuntembwe	Majora	Roda/Mwaiwala	MCHN Women	14	5	19	1-Nov
Blantyre	Kunthembwe	Mwaiwala	Mwaiwala	SILC Village Savings Committee	2	2	4	1-Nov
Blantyre	Kunthembwe	Mwaiwala & Loda	Mwaiwala	Water Point Committee	3	7	10	1-Nov
Blantyre	Kunthembwe	Mwaiwala & Loda	Mwaiwala	Women user of water points	0	11	11	1-Nov
Blantyre	Nsomba	Chinkhota	Kuponda	Farmers & extension agents		20	20	1-Nov
Blantyre	Nsomba	Chinkhota	Kuponda	SILC group	0	40	40	1-Nov
Blantyre	Machinjiri	Likomba	Kupmponda	Farmers	11	3	14	2-Nov
Blantyre	Machinjiri	Nikombwe	Masaka	Marketing, SILC	1	8	9	2-Nov
Blantyre	Manchinjiri	Masaka	Masaka	MCHN Women	5	0	5	2-Nov
Blantyre	Manchinjiri	Masaka	Masaka	Water Point Committee	5	1	6	2-Nov
Chikwawa	Chapananga	Chigwata	Muonda	Farmers	5	4	9	5-Nov
Chikwawa	Chapananga	Galonga	Chigwata	MCHN Women	5	0	5	5-Nov
Chikwawa	Chapananga	Galonga	Galonga	VNRM and Gender Champions	10	12	22	5-Nov
Chikwawa	Chapananga	Galonga	Galonga	Water Point Committee	6	7	13	5-Nov
Chikwawa	Katunga	Kalonga	Mpokonyola	Water Point Committee	0	4	4	5-Nov
Chikwawa	Katunga	Mpokonyola	Galonga	Village Area Committee members	3	1	4	5-Nov
Chikwawa	Katunga	Mpokonyola	Mpokonyola	MCHN Women	8	0	8	5-Nov
Chikwawa	Makhuwira	from two villages	Mpangowalimba, Malata	MCHN Women	19	1	20	6-Nov

District	TA	Village	GVH	Activity	M	F	Total	Date
Chikwawa	Makhuwira	Jana, Malata, Mpangowalimba	Jana	Lead Farmers	4	0	4	6-Nov
Chikwawa	Makhuwira	Jana, Malata, Mpangowalimba	Jana	PSP SILC	8	5	13	6-Nov
Chikwawa	Makhuwira	Jana, Malata, Mpangowalimba	Jana	SILC group	0	9	9	6-Nov
Chikwawa	Makhuwira	Jana, Malata, Mpangowalimba	Jana	VNRM Committee	7	4	11	6-Nov
Chikwawa	Makhuwira	Malata	Jana	VCPC members	8	9	17	6-Nov
Chikwawa	Makhuwira	Mpangowalimba	Mpangowalimba	VNRM and Gender Champions	5	6	11	6-Nov
Chikwawa	Makhuwira	Mphangowalimba	Malata	Water Point Committee	6	8	14	6-Nov
Chikwawa	Makhuwira	Tokeyala	Malata	Village Chiefs	7	0	7	6-Nov
Chikwawa	Maseya	from 2 villages	Mkwana, Mtangwula	MCHN Women	7	3	10	6-Nov
Chikwawa	Maseya	Mkwana	Matchono, Chiromo	Marketing, SILC	6	7	13	6-Nov
Chikwawa	Maseya	Mkwana 3	Mkwana	VNRM and Gender Champions	6	8	14	6-Nov
Chikwawa	maseya	Nkwana	Nkwana	VDC members	8	2	10	6-Nov
Nsanje	Mbenje	Kaleso	Kaleso	Gender Champions	1	1	2	7-Nov
Nsanje	Chimombo	Chambote	GVH Chambote	Water Point Committee	1	2	3	8-Nov
Nsanje	Chimombo	Chambote & Fransico	GVH Chambote	Women user of water points	0	8	8	8-Nov
Nsanje	Chimombo	Chimombo	Chimmbo	VNRM and Gender Champions	3	5	8	8-Nov
Nsanje	Chimombo	Fransiko, from two villages	Chimbote	MCHN Women	18	0	18	8-Nov
Nsanje	Chimombo	Simoko	Fransiku	Youth Club	1	4	5	8-Nov
Nsanje	Malemia	Lambwe	Lambwe	MCHN Women	5	1	6	8-Nov
Nsanje	Malemia	Lambwe	Lambwe	Women user of water points	0	10	10	8-Nov

District	TA	Village	GVH	Activity	M	F	Total	Date
Nsanje	Malemia	Mbeta, Lundu, Chingwe, Kasenga	Mbeta	Youth Club	5	8	13	8-Nov
Nsanje	Malenia	Chimwaza	Lundu	Farmers	3	9	12	8-Nov
Nsanje	Mbenje	Kaleso	Kaleso	VNRM and Gender Champions	5	5	10	9-Nov
Nsanje	Mbenje	Kaleso	Kaleso	Youth Club	2	4	6	9-Nov
Nsanje	Mbenje	Tambo	Tambo	Water Point Committee	2	1	3	9-Nov
Nsanje	Mbenje	Tambo	Tambo	Women user of water points	0	6	6	9-Nov
Nsanje	Mbenje	Thambo	Jambo	MCHN Women	16	0	16	9-Nov
				Totals	272	276	548	

ANNEX F: COMPARISON OF BASELINE AND ENDLINE INDICATORS - UBALE

Comparison of Baseline and Endline Indicators - UBALE Program

Malawi FY 2014 FFP Development Food Assistance Programs

	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]	Number of Observations Baseline	Endline
FOOD SECURITY INDICATORS						
Prevalence of households with moderate or severe hunger (HHS)	46.0	47.5	1.5	ns	2,334	1,149
Male and female adults	43.3	47.1	3.8	ns	1,740	866
Adult female, no adult male	57.5	48.4	-9.1	t	477	207
Adult male, no adult female	41.9	49.2	7.2	ns	113	74
Child, no adults	NA	NA	NA	NA	4	2
Average Household Dietary Diversity Score (HDDS)	3.9	3.4	-0.5	**	2,220	1,081
POVERTY INDICATORS						
Per capita expenditures (as a proxy for income) of USG targeted beneficiaries[2]	$2.05	$2.30	0.3	ns	11,200	5,365
Male and Female Adults	$2.07	$2.34	0.3	ns	9,209	4,495
Adult Female no Adult Male	$1.77	$1.84	0.1	ns	1,822	764
Adult Male no Adult Female	$3.18	$3.88	0.7	ns	227	138
Child No Adults	NA	NA	NA	NA	12	4
Prevalence of poverty: Percent of people living on less than $1.90/day	62.1	65.6	3.5	ns	11,200	5,365
Male and Female Adults	60.9	65.5	4.5	ns	9,209	4,495
Adult Female no Adult Male	70.3	72.1	1.8	ns	1,822	764
Adult Male no Adult Female	47.0	32.4	-14.6	ns	227	138
Child No Adults	NA	NA	NA	NA	12	4
Mean depth of poverty	25.4	30.4	5.0	*	11,200	5,365
Male and Female Adults	24.1	30.0	5.9	**	9,209	4,495
Adult Female no Adult Male	33.7	36.0	2.3	ns	1,822	764
Adult Male no Adult Female	17.8	9.7	-8.2	t	227	138
Child No Adults	NA	NA	NA	NA	12	4
WASH INDICATORS						
Percent of households using an improved drinking water source	62.5	63.4	0.9	ns	2,334	1,171
Percent of households in target areas practicing correct use of recommended household water treatment technologies	8.0	28.7	20.7	***	2,334	1,171

	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]	Number of Observations Baseline	Endline
Percent of households in target areas practicing boiling	4.0	7.5	3.5	**	2,334	1,171
Percent of households in target areas practicing bleaching	4.1	25.1	20.9	***	2,334	1,171
Percent of households in target areas practicing filtering	0.1	0.5	0.4	t	2,334	1,171
Percent of households in target areas practicing solar disinfecting	0.0	0.1	0.0	ns	2,334	1,171
Percent of households that can obtain drinking water in less than 30 minutes (round trip)	48.0	58.0	10.0	*	2,334	1,171
Percent of households using improved sanitation facilities	34.8	37.1	2.3	ns	2,334	1,171
Percent of households in target areas practicing open defecation	9.4	12.4	3.1	t	2,334	1,171
Percent of households with soap and water at a handwashing station commonly used by family members	4.2	8.7	4.5	*	2,334	1,171
AGRICULTURAL INDICATORS						
Percentage of farmers who used financial services in the past 12 months	34.3	29.8	-4.5	t	3,511	1,309
Male farmers	34.1	30.1	-4.0	ns	1,528	654
Female farmers	34.4	29.4	-4.9	t	1,983	655
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	35.9	22.8	-13.2	***	3,511	1,311
Male farmers	36.4	25.3	-11.2	***	1,528	656
Female farmers	35.5	20.3	-15.2	***	1,983	655
Percentage of farmers who used at least three sustainable agriculture (crop, livestock, NRM) practices and/or technologies in the past 12 months	52.9	31.4	-21.5	***	3,511	1,330
Male farmers	55.9	34.0	-21.9	***	1,528	660
Female farmers	50.6	28.7	-21.8	***	1,983	670
Percentage of farmers who used at least two sustainable crop practices and/or technologies in the past 12 months	75.1	53.5	-21.6	***	3,511	1,249
Male farmers	76.5	54.6	-22.0	***	1,528	629
Female farmers	74.1	52.4	-21.6	***	1,983	620

	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]		Number of Observations Baseline	Endline
Percentage of farmers who used at least two sustainable livestock practices and/or technologies in the past 12 months	1.8	2.1	0.4	ns		3,511	1,329
Male farmers	2.0	3.2	1.2	ns		1,528	661
Female farmers	1.5	1.0	-0.5	ns		1,983	668
Percentage of farmers who used at least two sustainable NRM practices in the past 12 months	18.6	13.8	-4.8	*		3,511	1,308
Male farmers	21.6	14.9	-6.7	**		1,528	653
Female farmers	16.3	12.7	-3.6	ns		1,983	655
Percentage of farmers who used improved storage practices in the past 12 months	51.3	19.4	-31.8	***		3,477	1,271
Male farmers	53.2	21.6	-31.6	***		1,513	638
Female farmers	49.7	17.2	-32.5	***		1,964	633
WOMEN'S HEALTH AND NUTRITION INDICATORS							
Prevalence of underweight women	7.5	7.1	-0.4	ns		1,876	847
Minimum Dietary Diversity - Women (MDD-W)	22.9	16.1	-6.7	**		2,160	1,031
Women's Dietary Diversity Score (WDDS)	3.3	3.2	-0.1	**		2,160	1,031
Percent of births receiving at least 4 antenatal care (ANC) visits[3]	42.8	48.3	5.5	t		1,252	609
Contraceptive Prevalence Rate	75.6	83.0	7.4	**		1,193	414
Prevalence of women of reproductive age who consume targeted nutrient-rich value chain commodities**	16.2	27.1	10.9	***		2,160	1,031
Prevalence of women of reproductive age who consume foods made from orange-fleshed sweet potatoes (OFSP)	14.1	24.5	10.4	***		2,160	1,031
Prevalence of women of reproductive age who consume foods made from bio-fortified beans (NUA)	2.7	3.1	0.4	ns		2,160	1,031
CHILDREN'S HEALTH AND NUTRITION INDICATORS							
Prevalence of underweight children under 5 years of age (Total)	13.0	8.2	-4.7	**		1,635	737
Male	13.9	8.5	-5.4	*		814	380
Female	12.0	8.0	-4.0	*		821	357
Prevalence of stunted children under 5 years of age (Total)	37.4	24.3	-13.1	***		1,615	737
Male	41.3	26.2	-15.1	***		803	380
Female	33.3	22.2	-11.0	**		812	357
Prevalence of wasted children under 5 years of age (Total)	2.7	2.6	-0.1	ns		1,613	737
Male	2.7	3.5	0.8	ns		803	380
Female	2.6	1.6	-1.1	ns		810	357
Percentage of children under age 5 with diarrhea in the last two weeks (Total)	19.0	24.1	5.1	t		1,695	712
Male	20.0	24.3	4.3	ns		846	363
Female	18.0	23.9	5.9	t		849	349

	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]		Number of Observations Baseline	Endline
Percentage of children under age 5 with diarrhea treated with ORT (Total)	69.2	63.9	-5.2	ns		323	174
Male	64.9	60.9	-3.9	ns		167	91
Female	74.1	67.1	-7.1	ns		156	83
Prevalence of exclusive breast-feeding of children under six months of age	70.8	76.4	5.6	ns		167	79
Male	74.0	74.8	0.9	ns		82	38
Female	67.8	77.9	10.1	ns		85	41
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	15.8	5.2	-10.6	***		507	223
Male	13.8	6.2	-7.6	*		264	121
Female	18.1	4.1	-14.0	***		243	102
Prevalence of children 6-23 months who consume targeted nutrient-rich value chain commodities**	8.7	16.2	7.5	*		507	223
Male	10.0	15.8	5.8	ns		266	121
Female	7.2	16.7	9.5	*		241	102
Prevalence of women of children 6-23 months who consume foods made from orange-fleshed sweet potatoes (OFSP)	7.0	12.2	5.2	t		507	223
Male	7.6	10.2	2.6	ns		266	121
Female	6.3	14.6	8.3	*		241	102
Prevalence of women of children 6-23 months who consume foods made from bio-fortified beans	1.7	3.5	1.8	ns		507	223
Male	2.4	3.9	1.5	ns		266	121
Female	0.9	3.0	2.1	ns		241	102
GENDER INDICATORS							
Percentage of men and women married or in union who earned cash in the past 12 months	69.2	51.2	-18.0	***		3,296	1,717
Percentage of men who earned cash in the past 12 months	89.3	75.4	-13.9	***		1,624	851
Percentage of women who earned cash in the past 12 months	49.5	27.3	-22.2	***		1,672	866
Percentage of men in union and earning cash who make decisions alone about the use of self-earned cash	63.2	40.6	-22.6	***		1,343	529
Percentage of women in union and earning cash who make decisions alone about the use of self-earned cash	24.5	29.9	5.4	ns		781	214
Percentage of men in union and earning cash who make decisions jointly with spouse/partner about the use of self-earned cash	26.7	39.8	13.2	***		1,343	529
Percentage of women in union and earning cash who make decisions jointly with spouse/partner about the use of self-earned cash	32.2	40.5	8.4	t		781	214

	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]		Number of Observations Baseline	Endline
Percentage of men and women with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	81.0	89.3	8.3	**		1,151	489
Percentage of men with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	73.5	86.8	13.3	**		499	182
Percentage of women with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	86.8	91.2	4.4	t		651	307
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	53.8	37.8	-16.0	**		494	177
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	43.6	40.6	-3.0	ns		517	238
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	20.1	31.9	11.8	**		494	177
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	19.3	23.5	4.3	ns		517	238
Percentage of men in union with children under two who make child health and nutrition decisions alone	33.0	16.2	-16.8	***		494	179
Percentage of women in union with children under two who make child health and nutrition decisions alone	38.8	39.2	0.4	ns		517	248
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	32.1	40.3	8.2	t		494	179
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	33.5	34.7	1.2	ns		517	248

[1] ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001

[2] Expressed in constant 2010 USD

[3] Women age 15-49 with a live birth in the past 5 years

NA : Not available, cell has less than 30 observations

ANNEX G: MULTIPLE REGRESSION ANALYSIS

Multiple regression analysis was undertaken to further explore the underlying factors associated with changes in several of the key program outcome and impact variables. The specific variables that were examined in this analysis are:

- Farmers' use of financial services
- Farmers' adoption of at least three sustainable agricultural practices
- Households with adequate food consumption (HHS)
- Underweight of CU5
- Stunting of CU5

The regression analysis measured the contribution of a number of variables to explain variation in these outcome and impact variables. General categories of explanatory variables were applied in all the regression analyses:

- **Survey round:** a dummy variable for survey round (0=baseline, 1 = endline) was included to measure the changes in the dependent variables over time independent of any of the other explanatory variables in the model;
- **Program participation:** this variable was included to measure the extent to which changes in the dependent variables are associated with the respondents' participation in program-supported activities;
- **Gender variables:** a measure of whether the household included a woman who earned cash in the past year;
- **Household characteristics** that measure household demographic characteristics, including gendered household type, and education characteristics of household members;
- **Non-food assets** as a measure of household wealth; and
- **District:** dummy variables for districts (Machinga is the excluded comparison district) to account for any geographic factors not captured in other explanatory variables.

Table 9 reports the results from the regressions estimating the probability that a farmer used financial services and the probability that farmers adopted at least three sustainable agricultural practices. Adoption of agricultural practices showed significant decreases from baseline to endline, controlling for all the other explanatory variables in the equations. That said, participation in agricultural trainings is positively associated with increased rates of adoption of sustainable agricultural practices. This suggests that program participation, in the form of agricultural trainings, promoted increased use of sustainable agricultural practices. However, there were factors over time unrelated to household socio-economic characteristics that not only acted as a barrier, but in fact encouraged lower usage of these types of practices promoted by UBALE. Note that adoption of sustainable agricultural practices and participation in value-chain activities are not included as explanatory variables for the adoption of sustainable agricultural practices, as they are used in the definition of the dependent variable.

The practice of value chain activities promoted by UBALE is associated with higher uptake of financial services. Neither the use of sustainable agricultural practices promoted by UBALE nor participation in trainings was associated with increased use of financial services.

There were no observable differences between male and female farmers with respect to use of financial services. However, female farmers were less likely to adopt sustainable crop practices compared to male farmers, when controlling for socio-economic characteristics, time, geography, and program participation.

In these regression models, a variable measuring non-food assets was included as an explanatory variable to measure the effect of wealth on use of financial services or adoption of sustainable practices. This wealth variable is positively associated with adoption of sustainable agricultural practices, suggesting that access to savings is a requirement to adopt these practices. The wealth variable is also positively related to the use of financial services, which implies that wealthier households, in general and when controlling for program participation (i.e., accounting for promotion of improved access to financial services in the sample likely targeted to poorer farming households), enjoy greater access to financial services.

Table 9: Regression Results for use of Financial Services and Adoption of Sustainable Crop Practices

Dependent variable	Use of financial services in the past 12 months	Adopt sustainable crop practices (3 or more)
Survey round		
Endline	-0.08	-0.62***
Program participation		
Sustainable agricultural practices/technologies	0.03	
Participated in value-chain activities	0.70***	
Participated in agriculture trainings	0.14	0.26*
Gender variables		
Female farmer	0.08	-0.16**
Household with female cash earner	0.1	0.05
Household characteristics		
Household size	0.06**	0.04+
Gendered household type (Adult-female headed)		
Adult males no adult female	-0.02	0.00
Adult female and adult male	0.02	-0.12
Child-headed – no adults	0	-4.14***
Share of adults with more than primary education	0.27*	0.20
Non-food assets	0.00***	0.00+
Ubale Districts (Blantyre)		
Chikwawa	0.28*	0.30+
Nsanje	0.71***	0.29
Constant	-1.65***	-0.24
Observations	4716	4745

+ p<0.1; * p<0.05; ** p<0.01; *** p<0.001

Table 10 provides estimates from the regressions of child nutritional variables: underweight and stunting. When controlling for household socio-economics characteristics, program participation, and geographic fixed effects, the probability of stunting decreased from baseline to endline, while there was no observed change over time, controlling for other factors, in the probability of a child being underweight.

Neither of the program participation measures was associated with the probability of stunting or underweight. Use of cleansing agent and water for washing also were not associated with either child anthropometric measure.

Child age is strongly associated with a higher likelihood of both child stunting and a child being underweight (the negative coefficient on the squared age term means that this effect is relatively less for older children than for younger). Surprisingly, a greater number of members in the household implies a lower probability of CU5 in the household being stunted. Neither wealth (as measured by non-food assets or education levels) is observed as being related to either child stunting or the probability of being underweight.

Table 10: Regression Results for Child Nutritional Variables, Underweight and Stunting of CU5

Dependent variable – probit regression	Underweight (%<-2sd)	Stunting (%<-2sd)
Survey round		
Endline	-0.53	-1.06***
Program participation		
Child rations	0.05	0.19
Nutrition training	0.14	0.29
WASH practices		
Using an improved drinking water source	0.08	0.03
Have cleansing agent and water	0.18	0.17
Child characteristics		
Child age (months)	0.06**	0.09***
Child age (months) squared	-0.00**	-0.00***
Male child	-0.02	-0.12
Had diarrhea in the last two weeks	-0.02	0.04
Gender variables		
Household with female cash earner	0.24	0.05
Household characteristics		
Household size	0.01	-0.09**
Count of children under 5 in household	-0.1	0.15
Gendered household type (Adult-female headed)		
Adult males no adult female	0.00	0.00
Adult female and adult male	0.11	0.09
Child-headed – no adults	0.00	0.00
Share of adults with more than primary education	-0.08	-0.2
Non-food assets	0.00	0.00

Dependent variable – probit regression	Underweight (%<-2sd)	Stunting (%<-2sd)
Ubale Districts (Blantyre)		
Chikwawa	0.3	0.06
Nsanje	0.07	-0.36+
Constant	-2.29***	-1.13**
Observations	2243	2225

+ p<0.1; * p<0.05; ** p<0.01; *** p<0.001

Table 11 presents regression results for household food security. The dependent variable is households reporting moderate or severe food insecurity based on the Household Hunger Scale. Overall, the probability that a household reports moderate or severe food insecurity increased from baseline to endline, controlling for other factors.

Neither receiving food or cash rations nor receiving training or other program activities reduced the prevalence of hunger for households in the Ubale program area. Households with female cash earners were associated with worsened household food security, all else being equal. This may suggest that in this instance, the female cash earner measure is picking up a program targeting effect. Household education and wealth levels (as measured by non-food assets) are more likely to be food secure, all else being equal.

Table 11: Regression Results for Household Food Security Status (Moderate or Severe Household Food Insecurity Based on HHS)

Dependent variables – probit regression	% HH with moderate or severe food insecurity
Survey round	
Endline	0.29**
Program participation	
Food or cash assistance (0-2)	-0.10
Nutrition training or other program activities (0-2)	0.04
WASH practices	
Using an improved drinking water source	-0.02
Have cleansing agent and water	0.45*
Gender indicators	
Household with female cash earner	0.22+
Household characteristics	
Household size	-0.01
Gendered hh type (Adult-female headed)	
Male headed HH - no adult females	0.39+
Male and female headed HH	0.04
Child headed HH - no adults	5.26***
Share of adults with more than primary education	-0.69***
Non-food assets (USD 2015)	-0.00**

Dependent variables – probit regression	% HH with moderate or severe food insecurity
Ubale Districts (Blantyre)	
Chikwawa	0.10
Nsanje	0.56***
Constant	-0.24
Observations	3355

+ p<0.1; * p<0.05; ** p<0.01; *** p<0.001